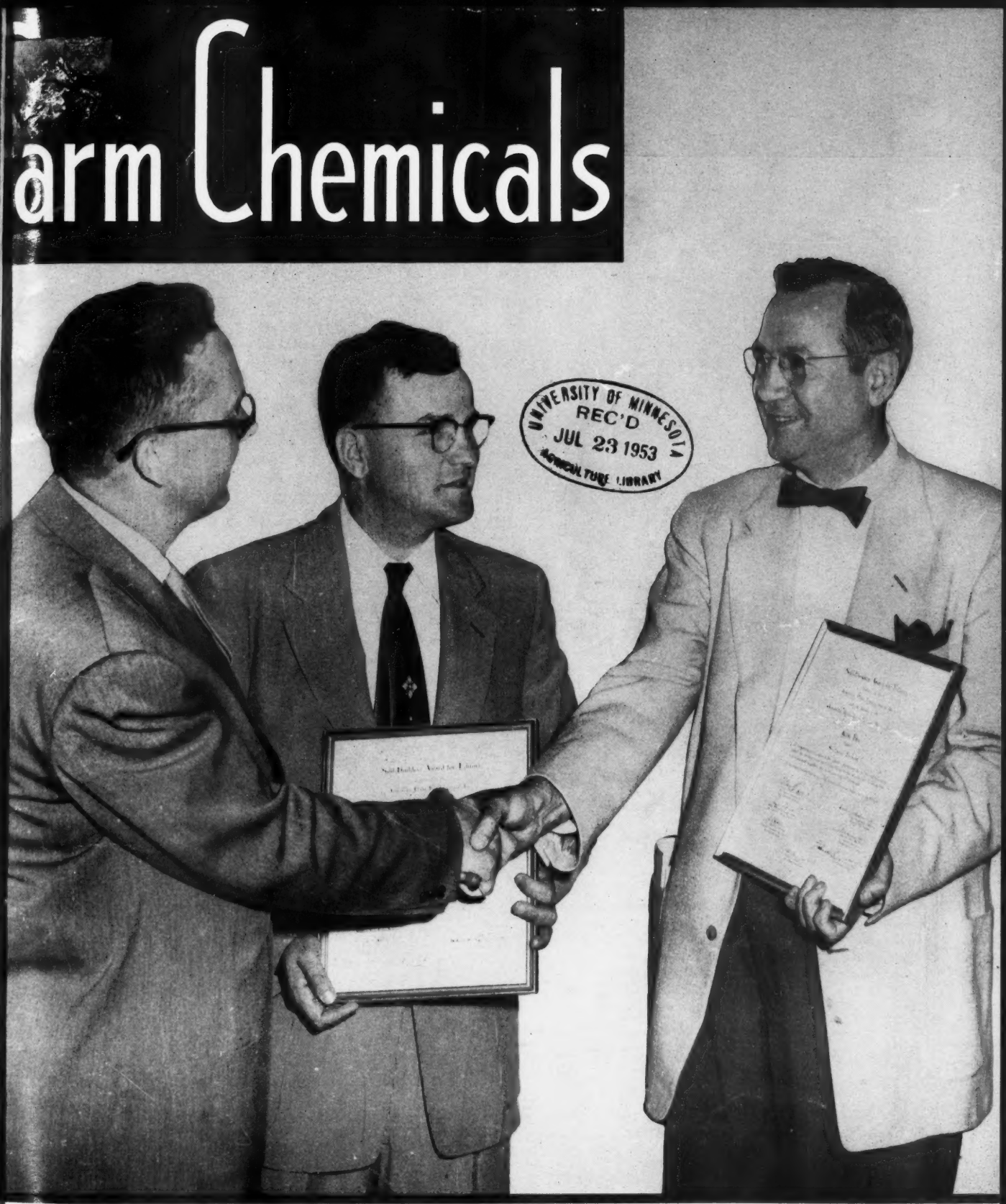
arm Chemicals



UNIVERSITY OF MINNESOTA
REC'D
JUL 23 1953
AGRICULTURE LIBRARY

AGRICULTURAL CHEMICALS • *SULPHATE of AMMONIA* • *ORGANIC AMMONIATES* • *SULPHUR*

VEGETABLE OIL MEALS AND FEEDSTUFFS

ALL FERTILIZER MATERIALS

Foreign and Domestic

EXCLUSIVE DISTRIBUTORS DUVAL SULPHUR AND POTASH COMPANY

ASHCRAFT-WILKINSON CO.

Home Office ATLANTA, GEORGIA Cable Address ASHCRAFT

Branches
...LK, VA. CHARLESTON, S. C.
...VILLE, MISS. TAMPA, FLA.
Columbus, Ohio

Subsidiaries
INTERSTATE MILLS, INC., CAIRO, ILL.
INTERSTATE WAREHOUSE, CAIRO, ILL.

She's looking through someone else's eyes

Few purchases are made without thought of how they will be judged by others.

Men who order more than 85 per cent of all Multiwall bags are well aware of this. They rate* a good impression high on their purchasing check list. This, of course, includes a good printing impression.

When your Multiwall bag puts its best foot forward visually, you take a long step toward both winning and holding your customer.

The *use* of what you sell, and the *re-orders* you receive, *inevitably* are influenced by your bag — how it looks, how easy it is to read, how easy it is to remember.

Most often, the best-dressed Multiwalls are Union Multiwalls. This is one of many good reasons why the biggest users of Multiwalls today look to Union for a greater proportion of their needs than at any other time.

More so every day . . .

IT'S UNION FOR MULTIWALLS

TRADE MARK UNION

*August, 1951 research study.

UNION BAG & PAPER CORPORATION • NEW YORK: WOOLWORTH BUILDING • CHICAGO: DAILY NEWS BUILDING

103274

dieldrin . . .

STOPS MOSQUITOES EVERYWHERE

Successful use of dieldrin in all types of climates, and under many varied conditions . . . proves beyond a shadow of a doubt that dieldrin controls mosquitoes, both larvae and adults . . . anywhere. And that goes for adult houseflies, salt marsh sand fly larvae, ticks, chiggers and fleas too!

A little dieldrin goes a long way. For adult mosquito control a spray solution of just 4.5 pounds of actual dieldrin to one hundred gallons of water is sufficient. For mosquito larvae control, .05 to 0.1 pound actual dieldrin per acre does the job. And dieldrin formulations make top-creaming emulsions that will not clog spray nozzles.

Dieldrin's long residual action makes it possible to have effective control days after application. And dieldrin is economical . . . makes your insecticide dollar work harder.

Application of dieldrin can only be made by such experienced personnel as Military Sanitation Units, Pest Control Operators, Public Health Organizations and Mosquito Abatement Crews.

Dieldrin is available from insecticide distributors in all areas. Write for further technical information on dieldrin and its application.

SHELL CHEMICAL CORPORATION

Julius Hyman & Company Division

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

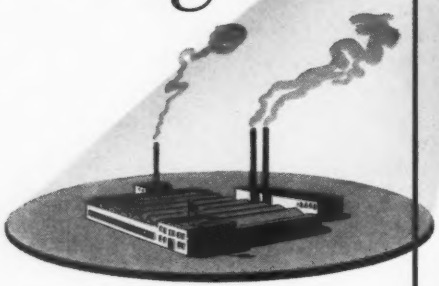
P. O. BOX 2171, DENVER 1, COLORADO

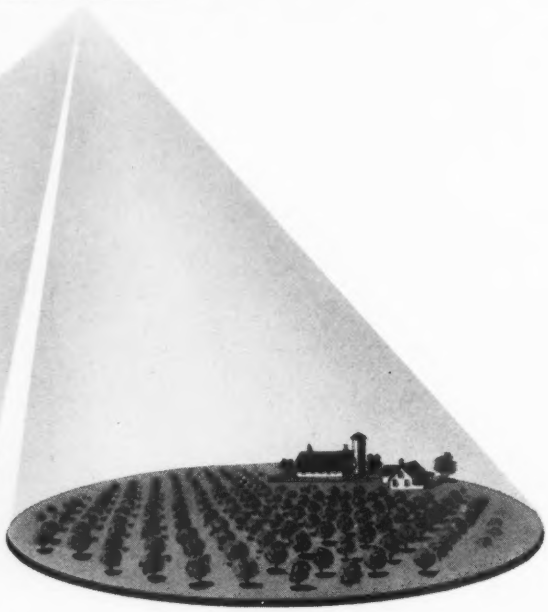
Atlanta • Chicago • Houston • Los Angeles • New York • San Francisco • St. Louis • Jackson, Miss. • Portland, Oregon

Published monthly. Annual subscription: in the United States, $3.00; Canada and Mexico, $4.00; other countries, $5.00. Entered as second-class matter, January 15, 1910, at the Post Office at Philadelphia, Pa., under Act of March 3, 1879. Registered in United States Patent Office. Publication office, 317 N. Broad St., Phila. 7, Pa.

TRONA
INDUSTRIAL
AND AGRICULTURAL
CHEMICALS
ESTON CHEMICALS

New Light





TRONA-ESTON CHEMICALS INCLUDE:

TRONA† BRAND	THREE ELEPHANT BRAND*
Lithium Chemicals	Borax, Technical (coarse and fine granular-powdered)
Muriate of Potash (chemical and agricultural grades)	Boric Acid, Technical and U.S.P.
Sulphate of Potash	PYROBOR* Dehydrated
Potassium Pentaborate	Borax, Technical (coarse and fine granular)
Salt Cake	Pentahydrate Borax (refined)
Desiccated Sodium Sulphate	TRONABOR* Pentahydrate
Soda Ash	Borax (crude)
Sodium Pentaborate	

ESTON BRAND

ALKRON* (parathion formulations)	ESTONOX* (toxaphene formulations)
BROMOFUME* (soil fumigants)	Organic bromides
ESTOMITE* (residual type miticide)	TETRON* (Tetraethyl pyrophosphate formulations)
TUMBLEAF† (defoliants)	ESTONATE* (DDT dust concentrates and emulsifiable solutions)
TUMBLE-WEED† (herbicides)	

Trade Mark Registered
†Trade Mark American Potash & Chemical Corp.

TRONA
INDUSTRIAL
AND AGRICULTURAL
CHEMICALS
ESTON CHEMICALS

ON OLD SUBJECTS...

Agriculture and Industry are as old as written history; old subjects, it is true, but through the years chemistry has altered established formulas and radically changed the accepted methods of both.

American Potash & Chemical Corporation has, since its earliest beginnings, supplied basic chemicals for both industry and agriculture. It now adds to these the Eston brand of fumigants, insecticides, herbicides, defoliants and refrigerants. Thus American Potash broadens its line of agricultural and industrial chemicals. It will continue to do so as other Trona, Three Elephant, and Eston brand products follow to meet customer requirements and market demands.

Keep an eye on American Potash.

PROVED CHEMICALS FOR INDUSTRY AND AGRICULTURE

American Potash & Chemical Corporation

Offices • 3030 West Sixth Street, Los Angeles 54, California
122 East 42nd Street, New York 17, N. Y.

• **ESTON CHEMICALS DIVISION**
3100 East 26th Street, Los Angeles 23, California

Plants • Trona and Los Angeles, California

In this issue . . .

Interesting and well-balanced . . . those were the most frequent comments made in the lobbies of the Homestead Hotel and the Greenbrier last month as members of the American Plant Food Council and the National Fertilizer Association, respectively, met for their annual conventions. Our word and picture coverage of the important sessions is in this issue. APFC, page 13; NFA, page 18. Excellent weather helped along a full program of sports at both meetings to round out the conventions. A strike of hotel employes at the Greenbrier also livened things up.

Ease of handling and economies in use are possible with several new types of "emulgates" developed by H. L. Woudhuysen & Associates. The products, which are novel emulsive vegetative oil solutions, all carry an organic compound of one or two heavy metals. Read about their development on page 26.

Parathion is a potent insecticide, but certain orchard mites got wise to it and developed a resistance to the material. That didn't deter USDA entomologists, who worked out pesticide combinations to kill the mites. See page 30.

It took a Southerner to show those stubborn Missourians the benefits to be derived from using fertilizers. The man who did the trick is William R. Thurston, who probably could sell refrigerators to Eskimos anyway. Given an excellent product like chemical fertilizers he really went places. Story page 34.

Systemics for cattle . . . latest development in a fast-developing field. USDA has been working on the project for several years as a means of controlling cattle grubs. Turn to page 38 for a report of results to date.

How modern fungicides have been used to combat the apparent resistance of apple scab to older control materials like sulfur is described in the article on page 45. It tells of work performed at the Maine Agricultural Experiment Station.

Lack of well organized and integrated statistics on the subject recently prompted the American Potash Institute to prepare a set describing performance of the industry since 1935. See page 47.

Packaging of liquid insecticides was one of several interesting topics reported on at the recent meeting of the Chemical Specialties Manufacturers Association in Chicago. For pesticide statistics and a report of the meeting, read the article on page 52.

Last year FARM CHEMICALS inaugurated a monthly feature rounding up latest information available from federal and state sources on appearance of various insects throughout the country. We resume the feature in the Industrial News section of this issue.

farm chemicals

Formerly
American Fertilizer & Allied Chemicals
Established 1894
PIONEER JOURNAL OF THE FARM CHEMICALS INDUSTRY

Vol. 116 **JULY, 1953** **No. 7**

Contents

Briefly Noted 7
Plant Food Council Convention 13
NFA Convention 18
Woudhuysen "Emulgates" 26
Controlling Orchard Mites 30
Thurston Chemical Co. 34
Systemic Cattle Injections 38
Apple Scab Control 45
Potash Industry Performance 47
Chemical Specialties Meeting 52
Market Letters 54
Industrial News 57
Editorial 76

Cover Story

Louis H. Wilson, director of information for the American Plant Food Council, presents Association's Soil Builders Awards at annual convention. Jim Roe, left, managing editor of *Successful Farming*, receives plaque for editor Kirk Fox, while Norman F. Reber, of *Pennsylvania Farmer* staff, accepts award for editor M. V. Gilpin. Next day Wilson was on the receiving end, when he was named an honorary lifetime member of the American Agricultural Editor's Association. *Story page 13.*

A magazine international in scope and circulation and devoted to manufacturers, mixers, and formulators of fertilizers and pesticides

Member Audit — *Bureau of Circulations*
Member Associated — *Business Publications*

Published Monthly by
WARE BROS. COMPANY
317 NORTH BROAD STREET, PHILADELPHIA 7, PA
Telephone MArket 7-3405

Staff
SAM LEWIS VEITCH . . . . . Publisher
A. A. WARE . . . . . Editor
HAMILTON C. CARSON . . . . . Managing Editor
G. P. TEEL, JR. . . . . Assistant Editor
K. F. WARE . . . . . Advertising Manager

Advertising Representatives
Harold H. Short, Jr.
51 E. 42nd St., New York 17, N. Y. . . MUrray Hill 7-6669
Al Zilenziger
333 N. Michigan Ave., Chicago 1, Ill. . . . FRanklin 2-7100
Simpson-Reilly Ltd.
1709 W. 8th St., Los Angeles 17, Calif. . . . Dunkirk 8-1170
703 Market St., San Francisco 3, Calif. . . . Douglas 2-4994

Subscription Rates
U. S., its possessions, Cuba and Panama per year . . . $3.00
Canada and Mexico 4.00
Other Foreign Countries 5.00
Single Copy 25
Back Numbers 50

JULY

Remember, the only safe fireworks are those that have been fired. July is SAFETY FIRST month.

To PLAY SAFE is important to remember for the producer, packer, and shipper of fertilizers.

RAYMOND MULTI-WALL PAPER SHIPPING SACKS give your fertilizers the SAFE PROTECTION you want for powdered materials. The heavy plies of specially prepared Kraft paper resist damage from rough handling, tears, and the usual hazards of transportation.

Raymond Shipping Sacks are made in various sizes and strengths, with valve or open mouth, sewn or pasted end.

A Raymond representative will be glad to assist in selecting the perfect RAYMOND MULTI-WALL PAPER SHIPPING SACKS for your particular needs.

Wire, write, or phone Raymond today!

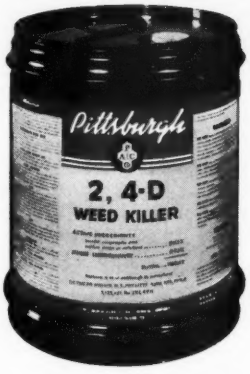
CUSTOM BUILT
• PRINTED IN MULTI-COLORS OR PLAIN

THE RAYMOND BAG COMPANY
Middletown, Ohio

Raymond MULTI-WALL PAPER SHIPPING SACKS

Your customers
could control weeds
like this . . .

but for fast, positive control, sell them



Pittsburgh 2, 4-D

You can increase your sales and profits and build up a greater list of satisfied customers by recommending *Pittsburgh* 2,4-D. This powerful chemical weed killer is economical and easy to use, and, in the low volatile ester formulation—*Pittsburgh* D4—the chances of damage to nearby crops is reduced to a minimum. *Pittsburgh* 2,4-D provides more uniform and dependable weed killing results because it's *Quality-Controlled* at every step of production—from coal to finished chemical. That's your best possible assurance of consistent peak quality and continuing, dependable supplies. Sales and technical information is yours for the asking.

PITTSBURGH AGRICULTURAL CHEMICAL COMPANY

EMPIRE STATE BUILDING, NEW YORK 1, NEW YORK

W&D 4468

Standard for Quality

ORGANIC INSECTICIDES: Benzene Hexachloride, Toxaphene, Dichloro Diphenyl Trichloroethane, Aldrin, Dieldrin, Chlordane.

ORGANIC PHOSPHATE INSECTICIDES: Parathion Wettable Powders, Parathion Liquid Concentrate, Metacide, Systox.

WEED KILLERS: 2,4-D Acid, 2,4-D Amine Concentrates, 2,4-D Ester Formulated Concentrates, 2,4-D Sodium Salt Monohydrate, D4 (Low Volatile 2,4-D Ester), 2,4,5-T Formulations.

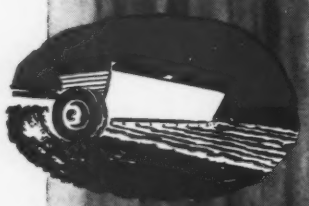
FUNGICIDES, SEED DISINFECTANTS, COTTON SPRAYS AND DUSTS, AND OTHER SPECIAL AGRICULTURAL CHEMICALS.

A DIVISION OF
PITTSBURGH COKE & CHEMICAL CO.
Grant Building - Pittsburgh 19, Pa.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

DAVISON

1. STORAGE CONTROL—will not cake or lump while in storage.



2. APPLICATION CONTROL—drills free and even . . . does not bridge over in the drill.

3. FOOD CONTROL—supplies uniform amount of plant food at desirable rates.

Davison's Granulated Superphosphate with 3-way control can mean added sales for you!

No longer is it necessary for you or the farmer to worry about lumping or caking . . . Davison's Granulated Superphosphate will store without becoming hard or caked. And when the farmer starts to apply Granulated Superphosphate in the field he will find there is no dusting nor will it bridge over in the drill. Granulated Superphosphate drills freely and evenly giving complete coverage. Because of the granular structure, plant food is released at desirable rates.

For added sales points be sure to get *Davison's Granulated Superphosphate with the 3-way control!*

Progress Through Chemistry

THE DAVISON CHEMICAL CORPORATION

Baltimore 3, Maryland

PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, SILICOFLUORIDES AND FERTILIZERS.

. . . Briefly Noted

New vice president of Davison Chemical Corp. is Dr. Paul W. Bachman. Formerly director of research and development, he will continue to head these activities. Prior to joining Davison in 1949, he held research positions with DuPont, General Chemical Co., Victor Chemical Works and Commercial Solvents Corp. Bachman received a Bachelor of Science degree and Ph.D. in Chemistry from the Johns Hopkins University.

Bachman

Ernest Hart, executive vice president of the Food Machinery and Chemical Corp., last month was awarded the honorary degree of Doctor of Agriculture from Michigan State College.

Bemis Bro. Bag Co.'s Jacksonville, Fla. plant discontinued operations June 30. The company's New Orleans and Memphis plants are increasing their production to offset the shut-down.

The "Florida Pesticide Act" recently was passed by the state legislature. Based on the Model State Pesticide Bill, the act was somewhat modified to include provisions of the Florida Agricultural Insecticide Law which previously regulated pesticides.

Manufacturing Chemists' Association elected William C. Foster its first full-time president at the 81st annual meeting of the group at White Sulphur Springs, W. Va. Foster formerly was Deputy Secretary of Defense, Administrator of ECA and president of Pressed and Welded Steel Products Corp.

Henry S. Curtis is new manager of production and engineering at Diamond Alkali Organic Chemicals Division, Inc. He will make his headquarters at the division s plant in Houston, Texas.

Two personnel changes at Pittsburgh Plate Glass Co.: H. B. Weed was named manager at Trenton, N. J., with John Henry Coon Jr., filling Weed's former position as manager of the Reading, Pa., branch.

New superintendent of Lion Oil Co.'s Barton plant is Roscoe L. Van Zandt. Stanley B. Johnson will serve as assistant superintendent of the plant.

Border Fertilizer & Supply Co., Inc., is the new name for Benedict Fertilizer & Supply Co., Inc. Location, ownership, management and personnel remain the same.

Paul Clancey has joined the staff of Chase Bag Co. He will represent the company in eastern Washington, northern Idaho and western Montana.

The Frank G. Hough Co.'s new district representative is Kenneth B. Larkin. His territory will include Washington, Oregon, Idaho, Montana and several Canadian provinces.

GI's in Korea face two foes: enemy soldiers and insects. It takes guns to fight the former but a lindane-pyrethrum mixture is doing a good job against the bugs. All returning wounded prisoners-of-war were given a thorough treatment with the chemical before sending them to hospitals.

Loren C. Skinner has been named chief engineer of Grace Chemical Co.'s $19 million plant now under construction near Memphis. He will be responsible for all phases of maintenance and future plant design and construction.

CALENDAR

July 16—Annual S. C. Fert. Meeting, Florence, S. C.

July 27-29—N. E. Branch, American Society of Agronomy, Orono, Me.

Sept. 6-11—American Chemical Society, Chicago.

Sept. 9-11—NAC Convention, Spring Lake, N. J.

Mathieson Chemical Corp. has appointed Robert L. Taylor director of public relations. He will be located at Mathieson's executive offices in Baltimore.

Philadelphia's Commercial Museum and Convention Hall will house the Exposition of Chemical Industries Nov. 30–De-c. 5. The exposition, usually held in New York, is expected to be the largest display of its kind ever held.

D. J. C. Copps has been elected to the board of directors and executive committee of Atlas Powder Co. Copps joined Atlas in 1929 as an assistant plant engineer. In 1952 he was appointed general manager of the explosives department, succeeding W. G. Frome.

Copps

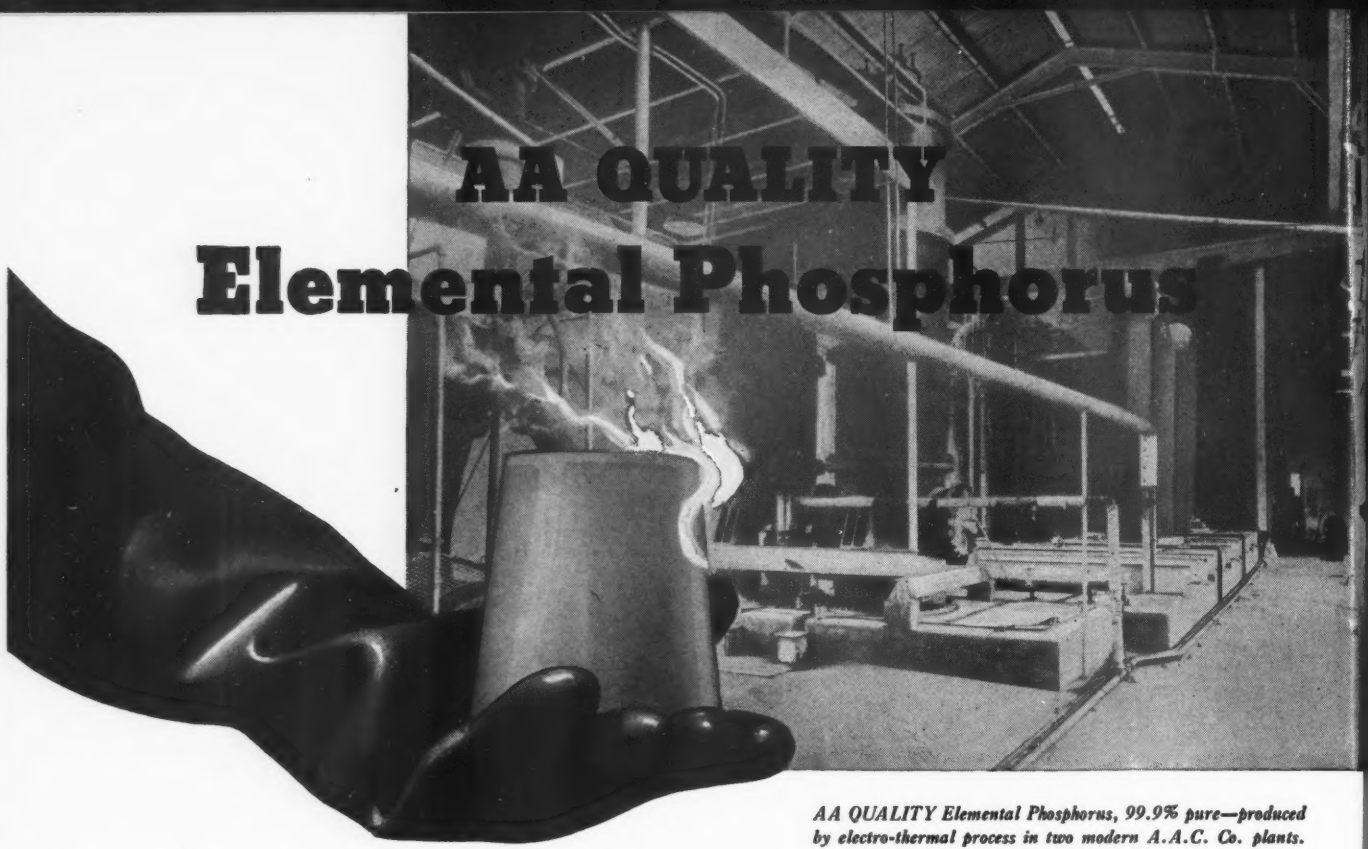
Frome, vice president, member of board and of the executive committee, retired June 1 after 43 years in the explosive industry. He joined Atlas in 1913 shortly after the organization of the company.

"Perthane," a technical grade of 1, 1-dichloro-2, 2-bis (para-ethyl-phenyl) ethane, is being manufactured in limited quantities by Rohm & Haas Co. The material, said to have extremely low toxicity, is planned to be marketed as a technical grade to manufacturers, a dust base to formulators and a wettable powder and emulsion concentrate to distributors.

Want to know how to set up and maintain a safety program? The National Safety Council's new 94-page "Handbook of Accident Prevention for Business and Industry" is a convenient safety guide for the manager of a small business or the supervisor of a department in a large organization. More information and prices can be obtained from the council, 425 N. Michigan Avenue, Chicago, Ill.

Died J. Wilson McBride, June 20. He was associated with Chamberlin and Barclay, Inc. for 29 years.

AA QUALITY
Elemental Phosphorus



AA QUALITY Elemental Phosphorus, 99.9% pure—produced by electro-thermal process in two modern A.A.C. Co. plants.

PRODUCED BY ELECTRO-THERMAL PROCESS, **in two modern A.A.C. Co. plants, AA QUALITY Elemental Phosphorus establishes and maintains highest standards of quality and uniformity—whether used in its 99.9% pure elemental form or in the ever-widening range of products derived from Phosphorus. *Quality* you can rely on, because of rigid control from mines to finished products. *Service* you can depend on, because of large-scale production and ample phosphate-rock reserves. Assured quality, security of supply, prompt service—good reasons for using AA QUALITY Chemicals. Mail coupon for full information.**

AA QUALITY Phosphorous Products

PHOSPHORUS AND PHOSPHOROUS COMPOUNDS
Elemental Phosphorus (Yellow-White)
Phosphorus Red (Amorphous)
Phosphorous Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

PHOSPHORIC ACID
85% N. F. Grade • 75% Pure Food Grade
50% Pure Food Grade

PHOSPHATES
Disodium Phosphate • Trisodium Phosphate
Dicalcium Phosphate, PHOS-FEED® Brand

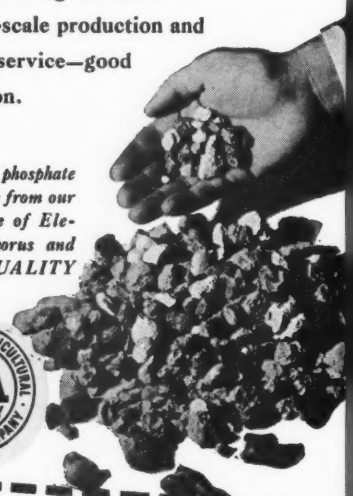
PHOSPHATE ROCK AND FERTILIZERS
All grades Florida Pebble Phosphate Rock
Superphosphate • Complete Fertilizers

Other AA QUALITY Products

FLUORIDES AND FLUOSILICATES
Sodium Fluoride • Ammonium Fluosilicate
Magnesium Fluosilicate • Potassium Fluosilicate
Sodium Fluosilicate • Zinc Fluosilicate
Fluosilicate Mixture • Ammonium Fluoborate
Aluminum Fluoride • Magnesium Fluoride

GELATIN
KEYSTONE® Gelatin: Edible, Photographic
Pharmaceutical, Technical

OTHER PRODUCTS
Animal Bone Charcoal
Bone Black Pigment (COSMIC® Blacks)
Keystone Ammonium Carbonate
Sulphuric Acid • Insecticides-Fungicides



Florida pebble phosphate rock as it comes from our mines—source of Elemental Phosphorus and other AA QUALITY products.

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY · AA · QUALITY

AA Quality Chemicals

The AMERICAN AGRICULTURAL CHEMICAL Co.
General Office: 50 Church Street, New York 7, N. Y.
30 factories and offices serving U.S., Canada, Cuba

The American Agricultural Chemical Co.,
Chemical Division, 50 Church St., New York 7.

☐ Please send Data Sheet with full information
☐ Please send samples of following products:

Name & Position_____
Firm_____
Address_____

farm chemicals outlook

Report from Washington
by Fred Bailey & John Harms

Economic troubles for business, now freely forecast for "sometime in 1954," are getting prime attention of Eisenhower administration. Officials believe we're now riding the defense-spending peak.

While some lines are feeling a downward trend already, a general let-down to be felt by most business now is expected for about the turn of the year.

Eisenhower medicine men are at work developing plans of action . . . cures to head off any big economic illnesses.

Thinking is that business ought to do all it can for itself in a declining economy . . . government will backstop, help out if necessary.

The developing government policy is this: Stimulate private investment and expansion when signs indicate this is necessary; ease credit, taxes; provide aid to states and counties to launch public projects . . . loans and guarantees of private loans would be used. Outright federal grants for application of "make work" poultices, such as practiced extensively in the 1930's, are not now being considered.

Government officials and industry men we've talked with have high hopes for even greater cooperation between government and industry through the setting up of industry councils to replace the National Production Authority. Commerce Department is in process of creating a system of new industry councils to advise on mobilization problems and daily relations between industry and government.

The councils, like one proposed for the chemical industry, will be a departure from the industry advisory committees under NPA. The system calls for "direct reporting" to Craig Sheaffer, assistant secretary of commerce for domestic affairs. This is expected to avoid routing of recommendations and advice through usual bureaucratic channels.

Don't look for passage of Miller pesticide bills this session of Congress. Congress is jammed with other "must" legislation. Leaders we've consulted believe that with only a month to go in the current session, there is "real doubt" that pesticide and chemical additive legislation will get through.

But don't count this legislation out. Miller proposals will hold their position in Congress, wherever they land by adjournment time, to be taken on from there during the second session. And although the odds are against passage now, the situation will bear watching . . . for stranger things have happened in Washington.

The Agriculture Department is not saying so publicly . . . but it plans a hold-down on subsidy payments for farm fertilizer and lime practices next year. That's the plan regardless of the money Congress authorizes for the 1954 Agricultural Conservation Program.

Several months ago the ACP Branch of the Production & Marketing Administration, which handles the subsidy program, sent out a "guide" to state and county offices informing them of the new government policy: Payment is to be made for lime and fertilizer applications only when they are tied in legitimately with "more permanent practices."

Just what this means in terms of actual practices that will be subsidized won't

be known until sometime early this fall. States and counties have sent in recommendations on practices for which payments will be made. USDA is now in midst of sifting these. A handbook will be published this fall delineating permissible practices and rates of pay.

ACP showed itself for the hot political potato it is when congressmen voted the appropriation. On a teller vote, in which ballots are not recorded, the House voted to cut the ACP program from $250 million this year to $140 million in 1954, as recommended by Agriculture Secretary Benson. But when a recorded vote was called, enough congressmen felt it judicious to go on record in favor of a bigger program ($195 million) . . . in view of congressional elections coming up in 1954.

The fertilizer and lime utilization program, started last year under the Democrats, is about ready to get into high gear with the GOP. Field work generally has gone on without much interruption, but the entire program was in doubt because of change in Administration.

Assistant Secretary J. Earl Coke, who heads the over-all conservation and research programs of USDA, is sold on the program.

You can look for more activity on the part of Land Grant Colleges in the utilization program as well as other farm programs from now on. They will be invited to take greater leadership to get the realization of the power of fertilizer across to farmers.

Coke believes, as he expressed at the convention of the American Plant Food Council, that the colleges can do much more than they have. He says: "The Land Grant Colleges with their vast resources in each state and their reputation for objectivity certainly can assume a much greater role in the development of farm programs."

The Fertilizer industry is taking some positive steps of its own to combat misleading advertising claims for some liquid fertilizers. National Fertilizer Association has issued a warning to the gardening public not to be misled by some manufacturers of liquid fertilizers for home use.

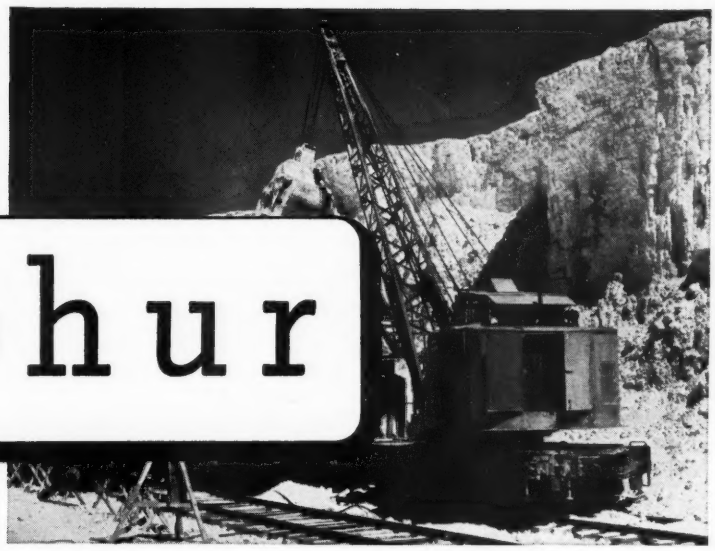
NFA urges buyers to (1) buy only from reliable firms, (2) to be sure the fertilizer is approved and registered with the State fertilizer control office and (3) follow fertilizer recommendations of the state experiment station.

Write for Labor Statistics Bulletin No. 1132, "Manpower Resources in Chemistry and Chemical Engineering." This report contains pertinent information on the labor force available to the chemical industry. One significant point is that a general call-up of Armed Forces reservists would remove one out of six chemists and one of four chemical engineers from civilian life. Address Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 50 cents.

Entomologists are changing their minds about what kind of bug year this will be. The wet, cool weather in many sections of the country provides ideal development conditions for many kinds of bugs. Earlier, indications pointed to just local outbreaks of insects, with exception of boll weevil.

Armyworms and flea beetles already have taken a big toll of midwest and eastern farm crops. Others that are developing into threatening proportions are pea aphids, other aphids, corn borer and pink boll worm.

Government entomologists believe they have found a method by which cotton planters can beat almost all cotton pests with a combination of two chemicals. Broad-scale spray tests in the Lower Rio Grande Valley indicate that DDT-methyl-parathion or metacide combinations may provide a more economical way of controlling cotton pests. The researchers are trying to find a combination that would do away with applications of different chemicals at different times.



Sulphur

Thousands of tons mined daily, but where does it all go?

Did you ever have the misfortune on a steaming, sticky, sultry day to sit it out on a crowded parkway, bumper to bumper, waiting for traffic to clear? No doubt your thoughts were plenty sulphurous but probably not along the lines we have in mind.

We're thinking of the mineral Sulphur and its link with the automobile. Each car accounts for a substantial poundage of Sulphur, some estimates put it at around 25 pounds for the average car. Give or take 5 pounds, it shows that a tremendous tonnage of Sulphur is needed each year to put cars, buses and trucks on the road ready to operate. And don't forget the tire and battery replacements going on every day.

Sulphur enters the automobile picture through the tires, steel sheets, plated and plastic fittings, glass, battery acid and parts, copper tubing and wiring . . . all of which call for the use of Sulphur or its compounds in connection with their manufacture.

Can you wonder that Sulphur goes into industry just about as fast as the sulphur producers of the Gulf Coast Region can get it above ground and cooled preparatory to shipment?

Texas Gulf Sulphur Co.

75 East 45th Street, New York 17, N. Y.

Sulphur Producing Units: Newgulf, Texas • Moss Bluff, Texas
Spindletop, Texas • Worland, Wyoming

One-Stop NITROGEN Service For Fertilizer Manufacturers

LION

Nitrogen

FERTILIZER MATERIALS

LION ANHYDROUS AMMONIA—For formulation. A uniformly high-quality basic product. Nitrogen content, 82.25%.

LION AQUA AMMONIA—For formulation or acid oxidation. Ammonia content about 30%. Other grades to suit you.

LION AMMONIUM NITRATE FERTILIZER—For direct application or formulation. Improved spherical pellets. Guaranteed 33.5% nitrogen.

LION NITROGEN FERTILIZER SOLUTIONS—For formulation. Three types to suit varying weather and manufacturing conditions.

LION SULPHATE OF AMMONIA—For direct application or formulation. Large free-flowing crystals. Guaranteed nitrogen content, 21%.

TECHNICAL SERVICE—Lion provides special technical assistance for fertilizer manufacturers. Write to CHEMICAL SALES DIVISION for quick service.

LION OIL COMPANY

EL DORADO, ARKANSAS

At the Homestead . . .

Judd, Maynard Talks Highlight APFC Meeting

By Hamilton C. Carson
Managing Editor

FERTILIZER was the topic of the American Plant Food Council convention last month but two speakers who mentioned the industry only incidentally stole the show.

To be sure, the more than 500 delegates attending the three-day session at The Homestead, Hot Springs, Va., heard many views on fertilizer production and utilization from agronomists, economists and government leaders.

But highlights of the session were talks by Rep. Walter H. Judd (R-Minn.) and H. H. Maynard, chairman of the department of business organization at Ohio State University.

Rep. Judd, speaking on "Political Horizons," held his audience in rapt attention at the banquet session of the convention for more than an hour.

'Miracle Industry'

Judd termed the fertilizer industry a "miracle industry" and said the convention of the APFC was an excellent example of a voluntary organization meeting in a free country.

The Minnesota Republican outlined what he considered the major favorable factors for America in the present world situation as well as the problems inherited by the present administration, then went on to call for a "sense of direction" in U. S. foreign policy.

The unfavorable factors inherited by the Eisenhower administration, Judd said, were a $270 billion debt, highest taxes in history, inflation, corruption, steadily falling farm prices, an entrenched bureaucracy and an unsuccessful foreign policy.

Rep. Walter H. Judd

The speaker said the taxes, debt, inflation and falling farm prices all were directly traceable to the foreign policy.

Judd said the nation's position "is weaker now than it was eight years ago" but went on to point out four factors favorable to our position.

A 'Fatal Blunder'

These he said are Stalin's fatal blunder in entering Korea, increasing dissension among Communists all over the world, ever-weakening Red propaganda and the change in the Kremlin.

The Congressman concentrated his talk on our Far East policy, with particular emphasis on Korea and lashed out at the policy of conceding to the Communists.

"If we compromise this time," he asked, "what are we going to give? If we give in on Korea Asia will fall."

He concluded that the United States must "stick to its principles," make trouble for the Communists on the mainland to save China and find a sense of direction, if its foreign policy is to be successful.

Maynard's topic was "Looking at Business." He advised members of the fertilizer industry to "get out among your customers at least once a month, to find out what they are thinking about your product."

He urged delegates to give up the allocation psychology and take up "creative selling."

He departed from his topic to urge association members take care of themselves and not to "take your jobs home with you."

Like Judd's speech, Maynard's was the topic of discussion among many groups of delegates in the lobby of the hotel and at the nearby golf course and tennis courts.

Advises Checkups

Maynard advised businessmen in the industry to have routine medical checkups twice a year, two vacations—one in summer and one in winter—and to recognize the psycological needs of men in big jobs.

He urged them to find out who is promotable in their businesses, to train them accordingly and to dele-

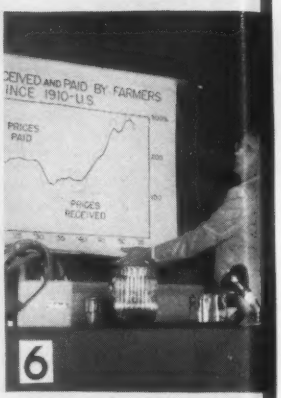
1

2

3

4

5



6

7

8

9

10

11

12

13

14

15

Photos on Opposite Page

1. John Sheffield, Smith-Douglass Co.; K. D. Jacob, USDA; George Zeigler, Naco Fert. Co. and Abe Goldhaar, Universal Detergents discuss the convention.

2. W. C. Huff, Ashcraft-Wilkinson Co.; Aaron Baxter, Coke Oven Ammonia Res. Bureau and Lester H. Smith, Vermont Extension Service meet in the hotel lobby.

3. William R. Huck, St. Regis Sales Corp. gets together with Andrew F. Storer of St. Regis Paper Co.

4. Paul Regan and W. E. Weems of American Cyanamid talk with A. P. Sale Jr., Coop. Fert. Serv.; F. E. Adams and Walter Nordquist of U. S. Steel Corp.

5. Mrs. C. B. Clay; W. A. Maddox Jr., Southwest Potash Corp.; Mrs. W. J. O'Shaughnessey and C. B. Clay of Cotton States Fertilizer Co. meet with Mr. and Mrs. Walter Hochschild, American Metal Co.

6. Dr. T. K. Cowden of Michigan State illustrates one of the points of his talk at the convention.

7. N. G. Pierson, Albatross Superphosphate Co. talks with Mr. and Mrs. G. W. Moyers, Int. Min. & Chem.

8. Rep. Clifford R. Hope addresses convention delegates while APFC President Paul T. Truitt looks on.

9. Ohio Valley Fert. Corp. representatives Mrs. G. R. Nooe, Mrs. Herbert Moore, Mr. and Mrs. Douglas McLoney, Herbert Moore and G. R. Nooe at reception.

10. Mr. and Mrs. J. J. Devlin, Southwest Potash Corp., chat with Charles T. Harding and Mr. & Mrs. A. J. Dickinson of Virginia-Carolina Chemical Corp.

11. Mr. and Mrs. E. M. Kolb, American Potash & Chemical Corp.; Henry L. Taylor, The Jaite Co. and Mrs. W. J. Murphy, American Potash & Chemical Corporation.

12. J. W. Pearsall and C. T. Harding of Virginia-Carolina meet with J. W. Harrell, Southwest Potash.

13. H. H. Maynard of Ohio State University delivering his Saturday morning address on sales management.

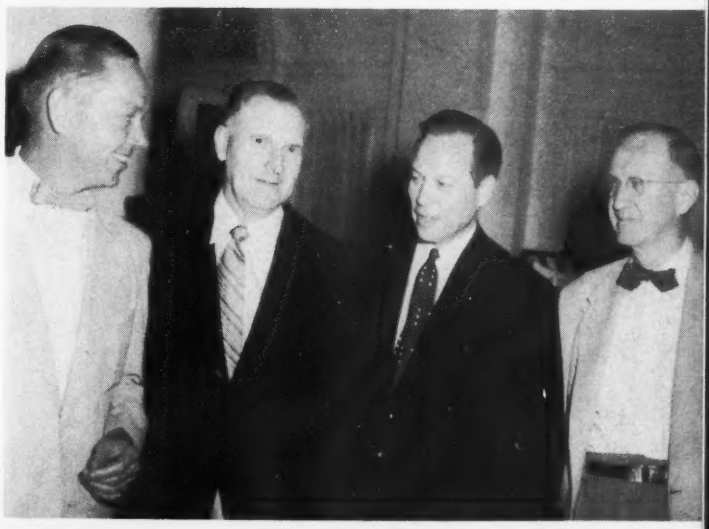
14. Mr. and Mrs. W. J. Murphy, American Potash & Chemical Corp. visit with Mr. and Mrs. J. F. Corkill, Pacific Coast Borax Co. and Mrs. G. L. Bruton, Ferro Corp.

15. Dr. J. A. Naftel, Pacific Coast Borax Co.; Dr. R. Q. Parks, Grace Chemical Co.; Dr. L. B. Nelson, USDA; Mrs. J. A. Naftel and Mrs. R. Q. Parks.

gate work to committees and subordinates.

"Success," he concluded, "is not no much being smart as being sensitive."

Paul T. Truitt, APFC president, in making his annual address, told the members attending the eighth annual convention that "producing the kinds and quantities of fertilizers necessary to meet the demands of American farmers is a contribution to the national wel-

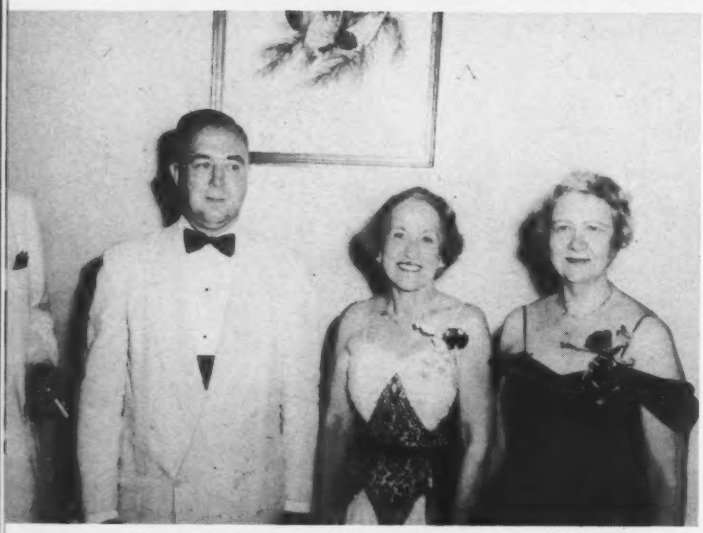


TOP: Dr. Arnold Klemme, University of Missouri; George Suggs and M. E. Hunter, Nitrogen Div., Allied Chemical & Dye Corp.; H. Gordon Cunningham, Tennessee Corp. and Leroy Donald, Lion Oil Co.

SECOND: J. D. Stewart Jr., Federal Chem.; Dr. H. B. Mann, American Potash Inst.; J. Earl Coke, Asst. Agriculture Secty. and H. M. Albright, U. S. Potash.

THIRD: Mr. and Mrs. C. F. Burroughs Jr., F. S. Royster Guano visit with J. R. Sheffield, Coronet Phosphate.

BOTTOM: Front row: Dr. A. W. Klemme, Mo. Ext. Serv.; Paul Sanders, "The Southern Planter" and H. A. Woodle, S. C. Ext. Serv. Back row: J. R. Taylor Jr., APFC; Lester H. Smith, Vt. Ext. Serv. and William E. Martin, Calif. Extension Serv.



fare" and reported that plant food production records have been set by the industry for the past 15 consecutive years.

He reviewed the fertilizer industry expansion program calling for 70 per cent more nitrogen, 55 per cent more phosphate and 51 per cent more potash by 1955, compared with 1951, and said "steady progress is being made in meeting these tremendously accelerated production goals." He added that new facilities are being built and older operations enlarged as rapidly as possible consistent with the availability of essential materials.

Following Truitt's address, Assistant Agriculture Secretary J. Earl Coke declared "we shall not scrap the present farm programs until we have something better," and emphasized the desire of the U.S. Department of Agriculture "to safeguard freedom and individual initiative."

Speaking on "Changing Policies in the USDA," the Department official said:

"Our sole desire is to be of service to the American people. We want to serve, not dictate. We want to help, not take over. We want to give leadership where leadership is our proper function." He added that "we expect to build in the experience of the past in order to make the future more secure and more prosperous."

Mr. Coke, further discussing the Department's present and future policies, said:

More Research Needed

"First of all, we are committed to greater emphasis on research and education.

"Second, we believe there should be greater integration in research by private and public agencies and we need to tie together these efforts.

"Third, it is a policy in this administration to decentralize government functions.

"Fourth, our agricultural policy will emphasize greater development of both domestic and foreign markets for farm products.

"Fifth, we are for more conservation, not less.

"Sixth, there must be maximum freedom for individual farmer action."

Leading off the second session, Rep. Clifford R. Hope (R-Kan.) chairman of the House committee on agriculture, discussed "the dilemma of the farmer."

"He stands in the middle and has nothing to say about the cost of the things he buys or the price of the things he sells."

Although recent years have been good for the farmer

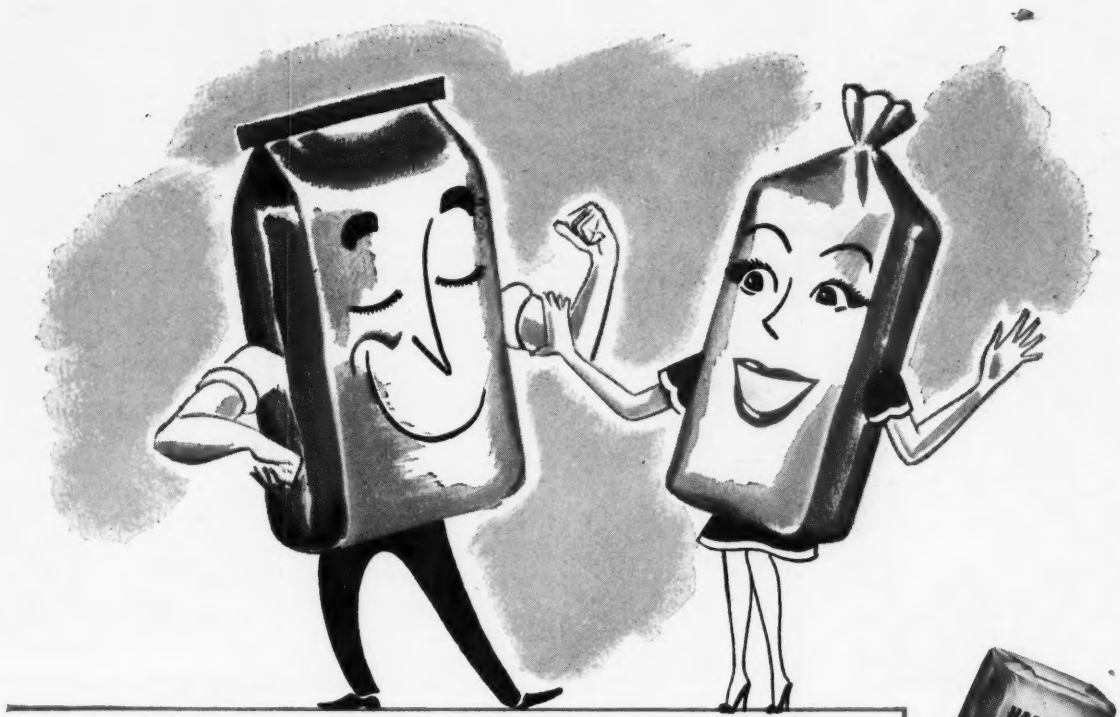
(*Continued on page 72*)

TOP: Louis Wilson, APFC, right, receives award of honorary lifetime membership in American Ag. Editors Assn. from Dr. Paul D. Sanders, at session.

SECOND: Alfred R. Smith and John B. Whitney of Chem. Construction Corp. meet with Martin DeSimo of American Cyanamid Co. in the Homestead lobby.

THIRD: George E. Petitt and John Hall of Potash Co. of America with Mrs. Hall and Mrs. Petitt.

BOTTOM: J. Earl Coke, Asst. Secretary of Agriculture, delivering his Friday morning address.



Strong . . .

Strength and durability of papers and materials used in Hammond Multi-Walls, provide you with extra tough quality bags for safest, dryest packaging of your products. Correctly designed . . . produced by skilled craftsmen . . . in modern plants equipped with efficient production and material handling equipment . . . Hammond Multi-Walls will deliver your products "as packaged." Consult your Hammond man for Multi-Walls that meet every requirement of your products, and your delivery schedules.

For Multi-Wall bags, "make it a habit to depend on Hammond."

HAMMOND

Multi-Walls

HAMMOND BAG & PAPER COMPANY

General Offices: Wellsburg, W. Va.

Plants in Wellsburg W. Va., Pine Bluff, Ark. and Charlotte, N. C.

Representatives in the following cities: CHICAGO, ILL • BLUEFIELD, VA. • ST. LOUIS, MO. MINNEAPOLIS, MINN. • LIGONIER, PA. • WASHINGTON, D. C. • NEW YORK, N.Y. AKRON, OHIO • DALLAS, TEXAS • KANSAS CITY, MO.

Pasted Valve Type

Sewn Valve Type

Open Mouth Pasted Bottom

Open Mouth Sewn Bottom

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

At the Greenbrier . . .

NFA Session Successful Despite Hotel Strike

By Sam Lewis Veitch
Publisher

DESPITE some unscheduled drills in bed making and curtailed service in the dining room (including a banquet-turned-buffet), the record breaking number of delegates attending the 28th annual convention of the National Fertilizer Association had a wonderful time.

At least no one in the somewhat de-glamorized Greenbrier Hotel expressed any alarm over the fact that for one day, room and dining service was drastically cut.

Most of the 850 delegates throught the abbreviated strike of seven electricians added interest to the highly successful convention, and took it quite in stride.

Delegates Had Other Problems

At any rate, the representatives of the fertilizer industry had more important things to worry about than a deficit of fried eggs or a rumpled bed.

Things like the recent drop in farm income coupled with still greater production of chemical fertilizers, for instance.

The delegates heard some reassuring words on this growing problem, both in the formal speeches by government and industry leaders and in the two forums on water and fertilizer utilization.

In fact nearly every one of the talks and discussions touched on the necessity of convincing farmers that fertilizers are one of their best investments and that it is folly to cut down on consumption in times of declining incomes.

Perhaps the speech by True D. Morse, under secretary of agriculture, was most reassuring.

His keynote statement that "the future for agriculture was never more secure and full of promise," was well supported by facts.

"The future for farming is dependable—now and for the long-time future," he said.

Cut Costs, Raise Profits

He cited fertilizer as "one of the most dependable ways to cut costs and increase profits," and asserted

---

Photos on Opposite Page

1. Parks A. Yeats, Okla. Dept. of Agriculture; G. A. Wakefield, Mathieson Chem. Corp. and M. C. Cummings, Farmers & Merchants Bank, exchange views.
2. Guests serve themselves at the buffet style annual banquet after hotel employes went on strike.
3. NFA staff members Mary Wallace Nelson, Robert Engle and Marilyn Burbank chat in the Greenbrier.
4. W. W. Johnson, Smith-Rowland Co. meets with Mr. and Mrs. B. E. Herlong, Foremost Fertilizer Co.
5. Arthur A. Schultz of Reading Bone Fertilizer Co. talks with Vernon Bishop of Central Chemical Corp.
6. Enjoying bridge game are Mrs. G. A. Coleman, Nit. Div., Allied Chem. & Dye Corp.; Mrs. Russell Coleman, NFA; Mrs. H. H. Tucker, Coke Oven Ammonia Res. Bureau and Mrs. W. W. Coffin, Link Belt Co.
7. Bennett E. Brown, Knoxville Fert. Co.; Leroy Donald, Lion Oil Co. and Gene Van Deren, Bluegrass Plant Foods, Inc., have a talk at the convention.
8. Speaker True D. Morse, Under Secretary of Agriculture talks while Louis Ware, Int. Min. & Chem. president and NFA board chairman looks on.
9. Ray King of Georgia Fert. Co. and J. E. Powell, Smith Agricultural Chemical Co., exchange views.
10. H. H. Tucker, Coke Oven Ammonia Res. Bur.; A. F. Miller, Swift & Co.; Aaron Baxter, Coke Oven Ammonia Res. Bur. and Abe Goldhaar, Univ. Detergents.
11. Mr. and Mrs. Fred Techter, Nit. Division, Allied Chem. & Dye Corp. seem to be enjoying the banquet.
12. J. C. Mooar, Sturtevant Mill Co. meets with J. N. Moore III and R. E. Robinson, Atlanta Utility Works and William T. Doyle, Sturtevant Mill Co.
13. Russell Coleman, NFA president and Rep. Charles A. Halleck (R-Ind.) who spoke at the convention.
14. Mrs. James Schell and Mrs. G. H. Kingsbury, Kingsbury & Co.; Mrs. Tobe Bradley, Potash Co. of America and Mrs. Gene Van Deren, Bluegrass Plant Foods.
15. Mr. and Mrs. Joe E. Culpepper, Spencer Chem. Co.

MONTANSALPETER

AMMONIUM SULPHATE NITRATE

26% NITROGEN

supplies the 2 key forms of nitrogen

Contains 6½% nitrate nitrogen — quick acting for early, vigorous growth. Contains 19½% ammonia nitrogen — slower acting for sustained growth through to harvest time.

easy to use

Pelletized and properly sized for flow. Easy to handle, ready to use for top dressing, side dressing and irrigation.

now available

F.O.B. all regular Atlantic and Gulf ports, shipped to the trade in even-weight bags. Write us today for a sample and further information.

Sole Distributors for
RUHR-STICKSTOFF AKTIENGESELLSCHAFT
Bochum, Germany

H. J. BAKER & BRO.

established 1850

600 Fifth Ave., New York 20, N. Y.
Branch Offices:
Maryland Trust Bldg., Baltimore, Md.
208 South LaSalle St., Chicago, Ill.
Savannah Bank & Trust Co. Bldg., Savannah, Ga.
501 Jackson St., Tampa, Fla.

Calmonite

AMMONIUM NITRATE-LIME

20.5% NITROGEN

2 FERTILIZERS IN 1
Contains 10.25% quick-acting *nitrate* nitrogen.
Contains 10.25% longer-lasting *ammonia* nitrogen.

GREEN PELLETS READY TO USE
Sized for flow and ease of application in broadcasting, top dressing, side dressing, and irrigation.
Non acid-forming.

ECONOMICAL SOURCE OF N
At low cost, Calmonite furnishes Nitrogen in the 2 forms needed by all plants — for rapid, early vigorous growth and sustained development.

SUPPLIES CALCIUM, TOO
Contains 35% to 40% calcium carbonate, secondary plant-food essential to soil productivity and good crop yields.

NOW AVAILABLE, F.O.B.
Regular Atlantic and Gulf ports, in even-weight, 6-ply paper bags with 2 bituminous liners.

LOOK AT CALMONITE!
Write for a sample and for additional information today.

Exclusive Distributors for
RUHR-STICKSTOFF AKTIENGESELLSCHAFT
BOCHUM, GERMANY

H. J. BAKER & BRO.
600 Fifth Avenue, New York 20, N. Y.
Branch Offices
Baltimore, Chicago, Savannah & Tampa

H. J. BAKER & BRO.

J. F. Doetsch, Chilean Nitrate and Paul Speer of U. S. Potash Company.

H.G.Cunningham,Tenn.Corp.;H.L.Dunton, VPI and G. G. Pohlman, U. of W. Va.

Louis Ware, President of Int. Min. & Chem. Corp. delivers annual address.

that fertilizer manufacturers have a widening opportunity opening up for them in the immediate future, with continued population increases.

He said fertilizer companies need more effective sales campaigns and more able salesmen to help induce farmers to buy all the fertilizer they should use.

Two NFA leaders joined with Morse in emphasizing the need for utilization of more fertilizers.

They were President Russell Coleman and Chairman of the Board Louis Ware.

Salient point in Coleman's annual convention address was this:

"Regardless of whether our food problem is one of surplus or shortage, the fertilizer industry holds one of the greatest weapons for attack.

'Double-Edged Sword'

"Plant foods from our factories are like a double-edged sword. One edge has the ability to increase agricultural production, thus giving our nation a strong weapon against starvation.

"The other edge of this sword can slash the cost of producing farm commodities, thus enabling the American farmer to compete profitably in a declining farm market and to produce lower-cost food for the consumer.

"Thus there is a strong place for fertilizers whether our nation is warring against hunger or battling the high cost of food production. How well farmers learn to use this weapon will determine to a considerable extent the solution of our agricultural problems.

Ware approached the present industry situation by outlining three conditions he said caused it.

First, he said was uncertainty over whether war or peace will prevail. This question overshadows all others, he stated.

The changed government in Washington with a more realistic approach to farm subsidies, surpluses and such problems was listed second.

"The change in Washington is, in my opinion, to the liking of most business men. The fertilizer industry welcomes and supports the corrections of the many government agricultural operations that have been unsound, "he declared.

He added that "sufficient time must be allowed, however, and corrective measures should not be made so fast that the agricultural industry will be made to suffer a private depression.

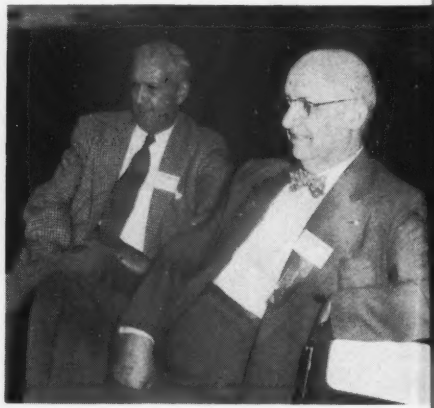
Continued Expansion

The third factor, according to the board chairman, is the continued expansion and changes in the fertilizer industry. He outlined recent

Shown are W. H. Wurster and C. E. Gettinger of Woodward & Dickerson.

K. D. Jacob of the USDA and Charles H. MacDowell of Winter Park, Fla.

J. R. McCarty, Int. Min. & Chem. Corp. and C. R. Martin of Miami Fert. Co.



Presenting

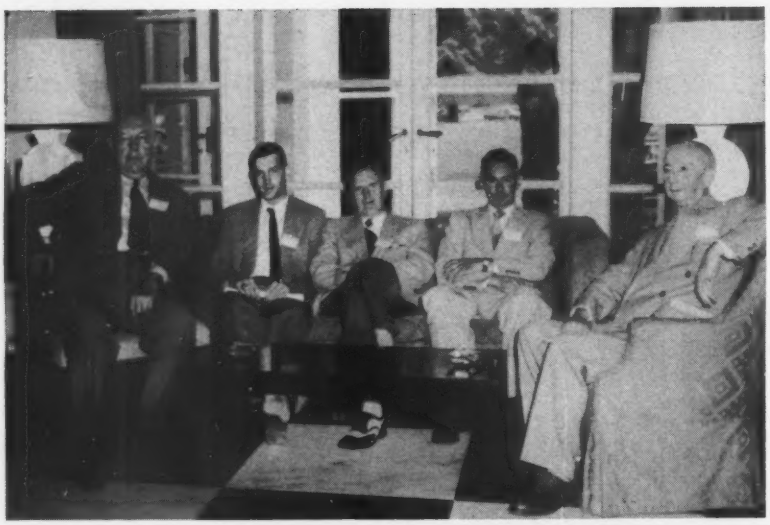
THE MOST MODERN BAG PRINTER

Manufactured in
One, Two, Three and Four Colors for printing made up bags of Paper, Cotton and Burlap, new or used.

Let us send you complete information with descriptive literature.

SCHMUTZ
MFG. CO.
18th and Main Streets
Zone 3
Louisville, Ky.

Cable Address "SCHMUTZ"—Long Distance Phone CLAY 7771



expansion moves in the industry and gave highlights of construction now underway or planned for the near future.

Mentioning the decline of farm income, Ware urged delegates to accept the challenge with greater sales efforts and continued good business practices.

In an informal discussion of developments in Washington under the Eisenhower administration, Rep. Charles A. Halleck (R-Ind.) iterated three Republican goals:

"Republican leaders in the Congress and the administration are in full agreement that our goals must be: cutting the costs of government, bringing the budget into balance and getting the taxes down out of the stratosphere—in that order."

Halleck's topic was "Under New Management in Washington."

Hugh M. Comer, president of Avondale Mills, Sylacauga, Ala., speaking on "The New South," said that progress in that area was the result of cooperative efforts of social, political and economic forces.

The South represents an ever expanding market for fertilizer products, he added, and said that industry officials should pay close attention to its growth.

Both forums, on "Efficient Water Utilization" and "Proper Use of More Fertilizer" were well attended by industry representatives.

Water Plus Fertilizer

All three speakers on the first panel, which was an open meeting of the NFA Plant Food Research Committee, stressed the close relationship of proper irrigation and utilization of fertilizers.

W. B. Camp, of W. B. Camp & Sons, Inc., Bakersfield, Cal., said

(Continued on page 70)

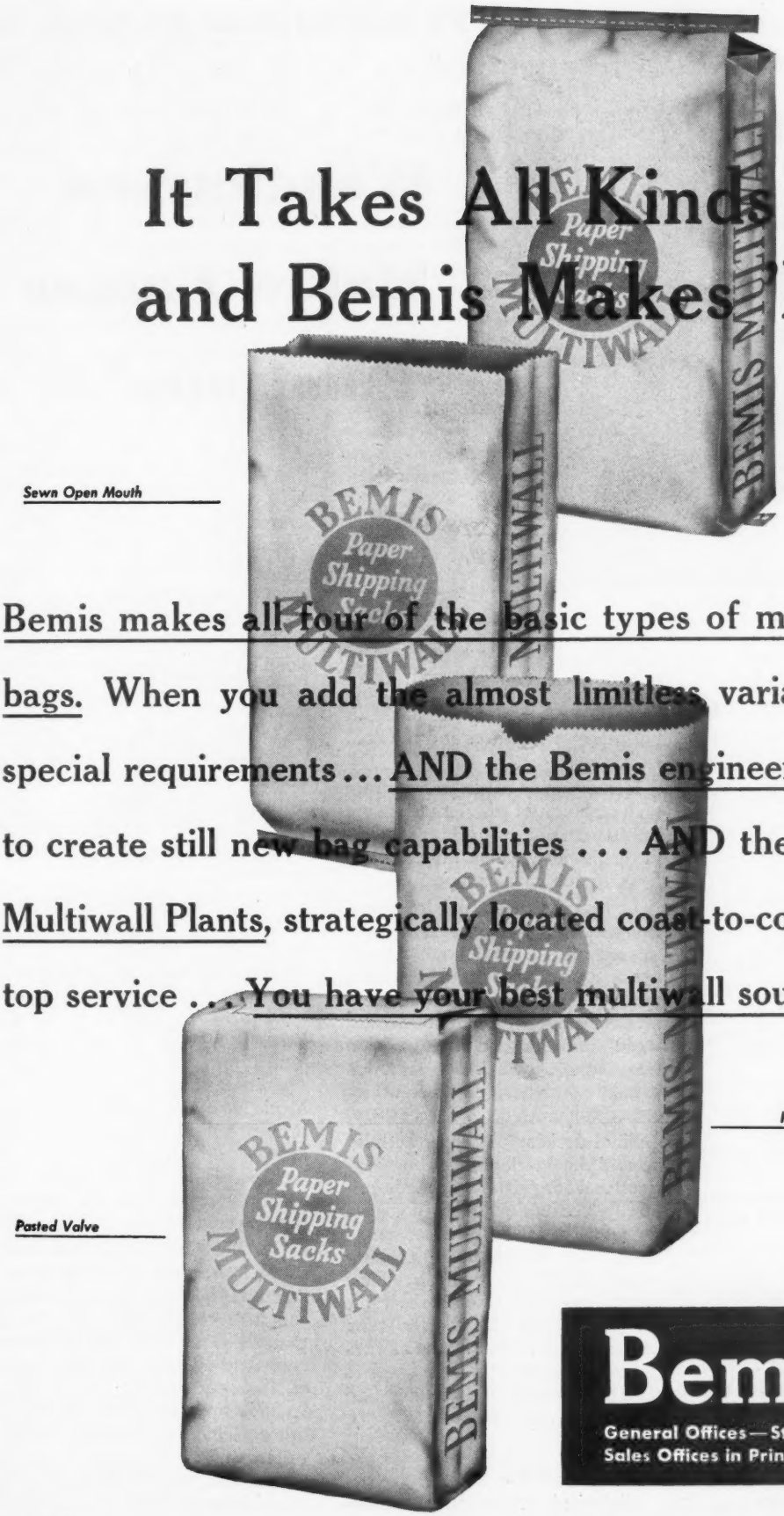
TOP: Mr. and Mrs. C. J. Bown, Grace Chemical Co. and Mr. and Mrs. R. H. Engle, NFA, meet at annual banquet.

SECOND: F. A. Easton, Sunland Ind.; Mrs. S. L. Nevins, Mathieson; B. H. Jones, Sunland Ind.; Mrs. Yontz Bonnett Jr.; Joe Whittington, Mathieson and Yontz Bonnett Jr., Bonnett Fert.

THIRD: F. S. Lodge, NFA; H. B. Mann Jr., H. B. Mann, Fielding Reed and J. W. Turrentine, American Potash Inst.

BOTTOM: Joe E. Culpepper, Spencer Chem., center, talks with L. G. Black and Earl Day, Ark-Mo Plant Food Co.

It Takes All Kinds... and Bemis Makes 'Em



Sewn Valve

Sewn Open Mouth

Pasted Open Mouth

Pasted Valve

Bemis makes all four of the basic types of multiwall paper bags. When you add the almost limitless variations to meet special requirements... AND the Bemis engineering know-how to create still new bag capabilities... AND the twelve Bemis Multiwall Plants, strategically located coast-to-coast to give you top service... You have your best multiwall source...

Bemis BEMIS BRO. BAG COMPANY

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

To control plant diseases . . .

H. L. Woudhuysen

Woudhuysen Makes Unique 'Emulgates'

By G. P. Teel Jr.

Assistant Editor

A UNIQUE approach to plant disease control, using emulsive oil solutions of organic metallic compounds, has been developed by H. L. Woudhuysen and Associates. Under investigation for several years at the company's Long Branch, N. J. laboratory-plant, the first of its new compounds was introduced in April.

H. L. Woudhuysen, chemist of the concern, based his work on improved emulsification techniques rather than development of new chemical structures. The process he developed, more intricate than the usual methods of producing emulsifiable concentrates, shows considerable promise in the development of new fungicide formulations. Of incidental interest is the creation of new outlets for a volume of vegetable oils and fatty acids.

Oil Solutions

The HLW Emulgates are characterized by the fact that they are essentially oil solutions of organic compounds in which total solubility of partly or almost completely oil insoluble organics has been achieved. The liquid carriers can be selected from a variety of mineral, vegetable or animal oils as well as from other hydrocarbons and solvents. As a result either volatile or film-forming emulsions can be produced. Active ingredients become a part of the oil phase in both the concentrates and the final emulsions.

Homogeneity of the concentrate and stability of the emulsion are linked with a narrow *p*H range within the liquids which is built up differently for each composition.

In making the initial investigation of the new technique, Woudhuysen could have followed a number of courses. It would have been possible to work on the development of mildew-proofing materials, wood impregnation agents, skin treatments, medicinals, emulsion paints, cosmetics, disinfectants or one of numerous other lines.

Final decision to center activity around the development of new agricultural fungicides was made primarily because plant pathologists for many years emphasized superiority of organo-metallic compounds for disease control. They have found that oil soluble metallic compounds are far better than water soluble mineral salts as fungicides, especially with respect to their penetration, spreading and adhering properties.

Striking Values

Biological tests also demonstrated that the fungistatic and fungitoxic values of the metallic materials were striking, even at very reduced concentrations.

Little came of these experiments primarily because there were no commercially acceptable formulations available. Most of the laboratory tests were worked out with make-shift preparations, lacking the essential stability, but despite this all results pointed toward a new approach to plant disease control. The process developed by Woudhuysen seemed to fit the picture exactly.

To develop the initial phase of its work the Woudhuysen group required more knowledge concerning the specific toxicity of various metals. They found that the facts differed in many respects from what they anticipated. It was concluded from tests performed at the Boyce Thompson Institute by Dr. S. E. A. McCallan and Frank Wilcoxon that toxicity within a group of elements increased, to a certain extent, with the increasing atomic weight toward the center of the periodic table, decreasing beyond that point.

The McCallan-Wilcoxon tests showed also that a number of elements, especially silver and osmium, supplied compounds more toxic than those of copper and even mercury, widely accepted antecedents of the new organic oil solutions. In addition to mercury and copper, other elements including cerium, cadmium, lead, thallium, chromium and arsenic demonstrated potential value as fungicides.

Certain organic structures have not lived up to expectations, Woudhuysen reports. For example, an acid radical may have the effect of depressing the innate activity of the metal, either by an increase in molecular size, a total neutralization or an overly strong linkage. (Heavy metals react like alkalies, combining with either mineral or fatty acids to form salts or soaps.)

Complete Screening

It would have been very useful to program a complete screening of most metallic compounds of different acid linkage including acids such as phthalic, tallic, salycylic, sebacic, undecylenic and octoic; fatty acids such as lauric, oleic, linoelic and ricinoleic as well as pinic and abietic acids. Eventually, according to Woudhuysen, the company hopes to complete such a task.

It is now clear that, through the Woudhuysen process, after reaction with these acids, the resulting organic compounds of most metals can be dissolved, made emulsifiable and applied by any of the usual spraying methods. To date the work has covered cadmium, cobalt, iron, manganese and zinc in an accessory way with primary attention devoted to copper and mercury. Recently silver was added to the list of metals under investigation.

The number of organic metallic soaps submitted thus far to advanced tests has not constituted more than a small part of all possible compounds. Some choice had to be made and a percentage of failure could not be entirely avoided with the researchers facing such a wide variety of potentially active elements.

Much Testing

As a part of the testing program the company has relied on private biological and field work carried out in cooperation with state agricultural experiment stations and plant protection services in some foreign countries. A more methodical program, on a limited scale, is carried out at the New Jersey station.

Primary interest in the HLW Emulgates has centered around the properties of their physical structure and behavior. Emulgates are free-flowing, homogeneous liquids, said to have good storage life and pass easily into stable emulsions. They are applied without mechanical agitation or addition of spreaders or stickers. The fungicides are adaptable to virtually any form of spraying and most types of application equipment.

The policy of the company is to market only compounds that can be sold at a competitive price. This is possible whenever the materials provide effective control at very reduced concentrations. In this way the use of relatively expensive metals such as mercury and silver is permitted.

The three available formulations all are emulsifiable concentrates carrying an organic compound of one or two heavy metals in a vegetable oil solution. Phenyl mercury salicylate is contained in the materials, combined with copper resin-

Summary of HLW Emulgates

Following is a brief run-down of available information on the three new emulgates (emulsive vegetative oil solutions) introduced by H. L. Woudhuysen & Associates.

Mercusol

Emulgate of 20 per cent copper resinate and 2 per cent phenyl mercury salicylate.
ADVANTAGES: Economical seed treatment; liquid seed disinfectant that can be applied in slurry treaters, dips, sprinklers or sprayers; used with varying amounts of water; eliminates irritating dusts and fumes arising from many other seed treatments; overcomes many known handicaps of present seed treatments at slightly lower application cost.
USES: Has given control of bunt or covered smut of wheat when applied at dilution of ½ fluid ounce per bushel. Many tests are under way designed to assess its value and dilution rates on other cereals and some vegetable seeds.

Merculine

Emulgate of 10 per cent phenyl mercury salicylate.
ADVANTAGES: Easily handled; no dust or fumes; light stability; good physical properties; adaptable to most application methods.
USES: Also found effective as a wheat seed treatment although not economical because of higher cost than mercusol. There are indications that a concentration of ¼ fluid ounce will still give control of bunt or smut and this possibility now is under test.

Shows promise as protectant and eradicant fungicide for control of seed-borne and soil-borne disease of vegetable seeds; root rot of coniferous plants (reduced losses by about 30 per cent in Oregon tests when used at 1 pint/100 gallons water); apple scab (tested at ½ pint/100 gallons in New Jersey) and as a dormant fruit spray to prevent later development of leaf curl, bacterial spot, canker and other diseases (1 quart/100 gallons dilution).

Tests now in advanced stage show promising control of flower root rot, turf diseases, crabgrass and also potential use as a soil disinfectant.

Mercadmine

Emulgate of 5 per cent cadmium ricinoleate and 5 per cent phenyl mercury salicylate.
USES: Effective for dollar spot on turf grasses with full control obtained at rate of 0.1 pint/5 gallons water/1000 square feet or 1 quart/100 gallons using 200 gallons per acre. Sprays were repeated five times at two week intervals in the California tests.

MATHIESON
agricultural chemicals

anhydrous ammonia
superphosphate
ammonium sulphate
nitrate of soda
base goods

9-gamma BHC dust base
9-15 BHC-DDT dust base
50% DDT dust base
12-14-gamma technical BHC
36-gamma technical BHC
ground and refined sulphur

high analysis pelletized fertilizers
Ammo-Phos-16-20-0, 13-39-0
Ammo-Phos with potash such as 12-24-12, 13-13-13
regular grade mixed fertilizers

DISTRICT SALES OFFICES:
Baltimore 3, Maryland
Houston 2, Texas
Little Rock, Arkansas
St. Louis 2, Missouri
Williamston, North Carolina
Lebanon, Pennsylvania
Jackson, Mississippi
Phoenix, Arizona

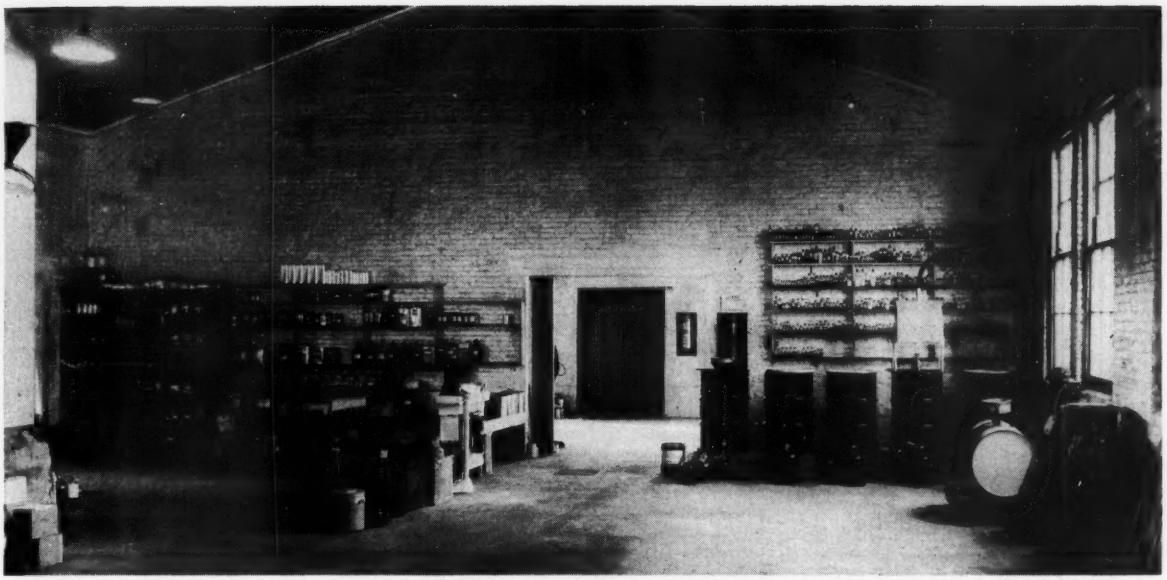
MATHIESON

For complete information write:

MATHIESON CHEMICAL CORPORATION

Mathieson Agricultural Chemicals Division

Little Rock, Arkansas 1633



Portion of the H. L. Woudhuysen plant at Long Branch, N. J., where a new approach to the solution of certain plant pathology problems is being made with development of a set of "emulgates," or emulsive oil solutions.

ate in one and cadmium ricinoleate in another. The third has only the mercury compound.

Tests completed or now under way touch on many different fields in addition to crop disease: root, soil, bulb and flower disinfecting; deficiency problems; seed protection and systemic, eradicant and protective properties.

Both Mercusol and Merculine ranked among highly effective materials tested in 1952 at Pullman, Wash. for control of wheat bunt. The fungicides were applied as liquids at the rate of one-half ounce per bushel of Red Bobs spring wheat. A complete absence of smut was noted in rows treated with Merculine.

West Coast Tests

In turf fungicide trials carried out at UCLA in 1952, Mercadmine at the rate of 0.1 pint/5 gal. water/1,000 sq. ft. demonstrated good control of dollar spot. Together with Cadminate and PMAS it also had the greatest residual effect in retarding the recurrence of disease of the eight fungicides under test.

Potential applications of the Woudhuysen emulsification technique indicate that it could bring about a new branch of the industry producing materials such as soil emulsions to carry either pesticide materials, minor elements or to improve water holding power and aggregation of soil particles. Moreover, the emulsions can be used as carriers for chemicals in addition or in place of the oil soluble metals.

Development of this rather unusual approach to plant disease control has not been simple, but now that the first group of practical materials is ready for distribution, it can be expected that many more will be produced by the Woudhuysen group, including some to control diseases of agricultural crops, as well as emulsion concentrates for different, and possibly new purposes.

Readers undoubtedly will find of great interest the results of future HLW Emulgate tests as they are published in FARM CHEMICALS. ◆

TABLE 1.—Agar Plate Screening Tests with MERCULINE, July/August, 1952. New Jersey Agricultural Experiment Station

First fungus growth develops at the indicated concentrations:

Organism	Copper (50%)	Standard Organic Fungicide (Control)	MERCULINE	Untreated (Check)
Fusarium	2%	0.01%	0.001%	
Stemphylium	0.1%	0.01%	0.001%	
Sclerotinia	2%	0.0001%	0.0001%	
Alternaria	1%	0.0001%	0.0001%	All
Rhizoctonia	1%	0.01%	0.0001%	over
Glomorella	3%	0.01%	0.001%	3%
Botrytis	0.5%	0.0001%	0.0001%	
Phomopsis	1%	0.0001%	0.001%	
Diaporthia	0.01%	0.0001%	0.0001%	
Cephalothecium	0.1%	0.001%	0.001%	

Malathon, EPN, Systox, Aramite and combinations control resistant mites

. . . Where Parathion Failed

By E. J. Newcomer and F. P. Dean

Bureau of Entomology and Plant Quarantine, USDA

An important resistance problem, that of orchard mites to parathion, was combatted successfully last year by USDA entomologists.

The men described their work at the recent meeting of agronomists in Philadelphia.

Using parathion combined with DMC or using EPN, Systox, Aramite or *p*-chlorophenyl *p*-chlorobenzenesulfonate, they brought the mites under control after the insects had developed resistance to parathion when applied alone. Text of their report follows:

THE RESISTANCE of certain orchard mites to parathion in the Pacific Northwest has been reported by various entomologists. Observations on their control by growers were made at Yakima, Wash. in 1951 (Newcomer & Dean, 1950). In 1952 we had an opportunity of making our own experiments on resistant mites.

Experiments on orchard mites were started by us at Yakima in 1947 in a Winesap orchard that had been used for several years for tests on other apple pests. The Pacific mite predominated the first season, but in 1948 and 1949 the European red mite became the dominant species, although the Pacific mite continued to be common in the trees. Since 1950 the Pacific mite has been the only species of economic importance, and the European red mite has become scarce.

The plots in this orchard consisted of four or seven trees, depending on whether they were to be examined only for control of mites or also for control of the codling moth.

Each year the plots were laid out at random, individual trees in each plot being scattered across the orchard without regard to previous treatments. Therefore, the number of years an individual tree had been sprayed with parathion varied.

Presented at the meeting of the American Association of Economic Entomologists, Philadelphia, Pa. Dec. 15–18, 1952.

Parathion Resistance

Evidence of resistance to parathion did not appear in this orchard until 1951, after it had been used for four seasons. In 1952 the evidence was confirmed from records of 42 trees sprayed with parathion that season. Of these trees, 16 had been sprayed with parathion only in 1952, 15 had had parathion for two seasons, eight for three seasons, two for four seasons and one for five seasons. Two or three applications of parathion were made each season.

The 42 trees were divided into six plots in which the mites were counted separately, but counts of mites on individual trees were not made. Each plot of seven trees included three or more that had been sprayed with parathion two or more seasons.

Thus, many of the trees had had from five to 10 applications of parathion. Whether this has a bearing on the development of resistance is not known.

However, the results in another plot in this orchard indicate that resistance may follow repeated applications that have not entirely controlled the mites. Most of the trees in this other plot had not been sprayed with parathion since 1950 and no parathion was used on them in 1952 until August.

Experimental Insecticide

Earlier in the season they had been sprayed with an experimental insecticide which had proved to be rather ineffective against the codling moth and orchard mites.

Therefore, the plot was sprayed in August with two pounds of 50 per cent DDT and one pound of 15 per cent parathion to 100 gallons, both materials being wettable powders. There were more than 900 mites per 100 leaves two days before this spray was applied, but only 46 a few days after application. The mites on these trees apparently had not built up resistance.

It is evident from the data shown in Table 1 that the use of progressively increased quantities of parathion has not headed off the infestation. In 1948, one-quarter pound

of 15 per cent wettable parathion effected control; in 1952, one pound did not. And as shown in Table 2, one-third pound in 1949 gave good control in two cover sprays and the infestation increased very little after the last application.

In 1952, one pound in the second cover spray controlled quite well, but it failed in the third cover. Analysis of this parathion showed it to be up to the strength stated on the label—that is, slightly more than 15 per cent.

Second Experiments

In 1952 experiments against mites were started in a second apple orchard, which had never been used before but which was infested with European red mites and what probably is *Tetranychus mcdanieli* McG. Both species proved to be resistant to parathion. The history of this orchard is not known, except that it had undoubtedly been sprayed with parathion for two or three seasons.

Table 3 gives the results obtained in both orchards in controlling the three species of mites. An earlier application of acaricides, not shown in the table, had been made in both orchards in June. Parathion alone was outstanding in its failure to control the Pacific mite. but all other acaricides controlled it very well.

Parathion also failed to control *mcdanieli*, even though an additional application was made early in August. But in combination with DMC, both used at half strength, it gave good control. The other acaricides were so effective that the August application was not necessary.

Some differences appeared, the mites increasing late in the season more in trees sprayed with malathon, R-242, and *p*-chlorophenyl *p*-chlorobenzenesulfonate than in trees sprayed with EPN, systox or aramite.

The infestation of European red mites was greater than that of the other species three weeks before the second cover spray, because the first application had come when this species was mostly in the egg state, and none of the acaricides had controlled it well.

It should be noted also that the population of this species has more of a tendency to decline late in the summer than that of *Tetranychus* because of the increasing deposition of winter eggs that do not hatch until the following season.

Poor Control

Here again control with parathion was poor even with additional application in August. In combination with DMC, it was somewhat better. Malathon controlled well, but not so rapidly as some of the others. EPN and aramite were perhaps not quite so effective as malathon, systox, R-242 or *p*-chlorophenyl *p*-chlorobenzenesulfonate.

There are indications from these tests and from observations made in other orchards that for controlling resistant mites it may be advisable to use more than one acaricide during the season, either alternately or in combination with parathion.

Summary

In the Pacific Northwest resistance to parathion has developed in three species of orchard mites—*Metatetranychus ulmi* (Koch), *Tetranychus pacificus* McG. and *T. mcdanieli* McG. It seems to have been brought about by repeated applications of parathion. Good control of these resistant mites has been obtained by combining parathion with DMC or by using malathon, EPN, systox, aramite, R-242 or *p*-chlorophenyl *p*-chlorobenzenesulfonate. ◆

Literature Cited

Newcomer, E. J., and F. P. Dean. 195 . Preliminary report on orchard mites resistant to parathion in Washington State. Jour. Econ. Ent. 4: (In Press).

TABLE 1.—Effect of parathion on Pacific mites.

Year	Pounds of 15% parathion per 100 gallons	Number of applications	Number of mites		Average number of mites per 100 leaves during August
			Before spraying	After spraying	
1948	¼	3	55	5	45
1949	⅓	3	309	20	110
1950	½	2	50	2	123
1951	¾	2	1224	250	652
1952	1	3	172	234	1791

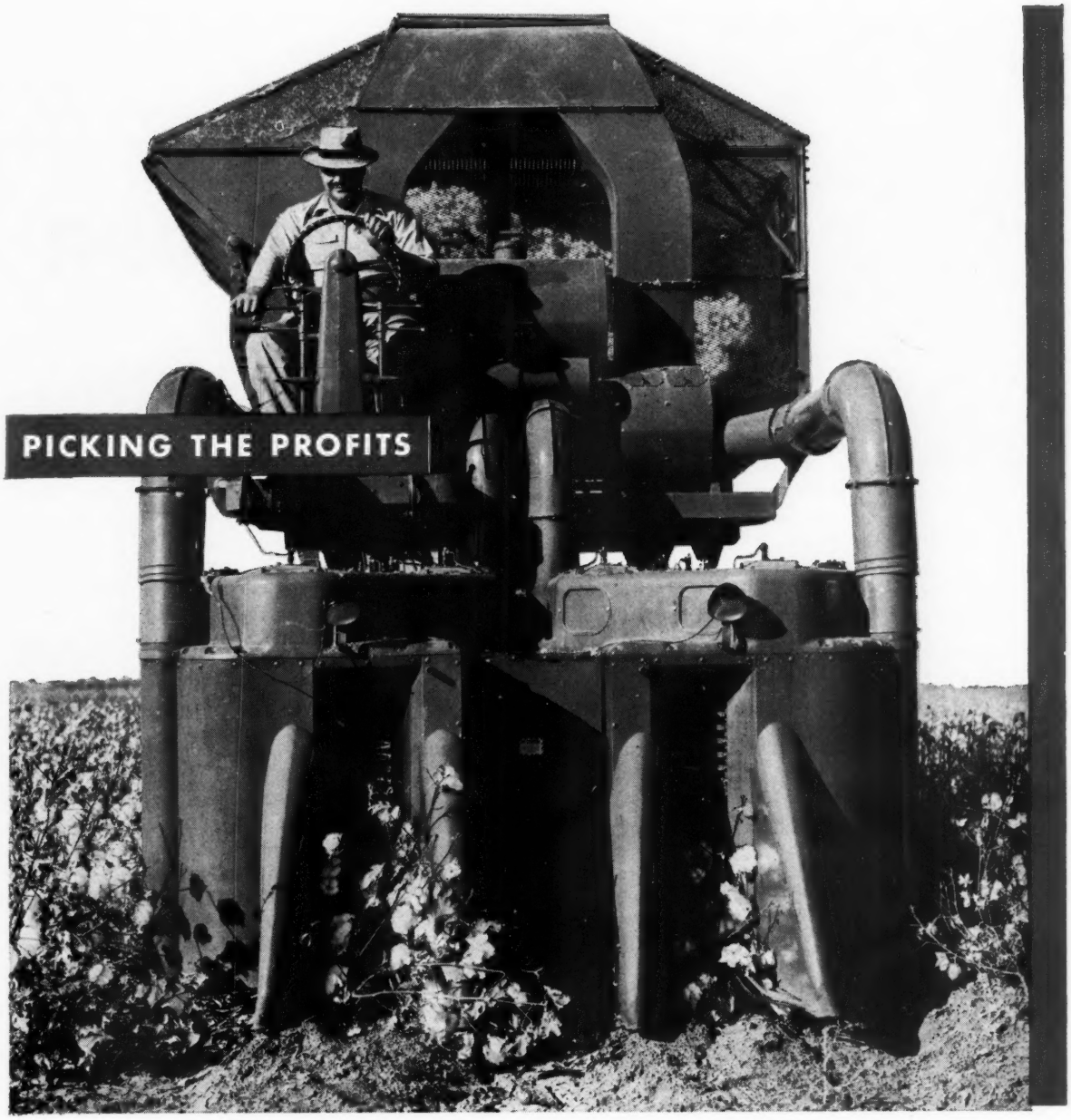
TABLE 2.—Average control of Pacific mites with parathion in 1949 and 1952

	2d cover		3d cover			
	Before	After	Before	After	2 weeks after	4 weeks after
1949 (⅓ lb.)	147	33	220	40	13	107
1952 (1 lb.)	223	29	697	1216	1148	3009

Table 3.—Control of Three Species of Orchard Mites with Parathion and other Acaricides, 1952. Number of Mites per 100 leaves.

TREATMENT (quantity per 100 gal.)	Second cover (mid-July)			Third cover (early August)			
	3 weeks before	2 days before	2 days after	1 day before	3 days after	2 weeks after	4 weeks after
PACIFIC MITE							
Parathion 15%, 1 lb.	0	223	29	697	1216	1148	3009
Malathon 25%, 2 lb.	0	0	0	10	0	0	10
EPN 27%, 1 lb.	0	0	0	0	30	30	180
Systox 42%, 6 oz.	0	0	0	0	5	0	40
Aramite 15%, 1 lb.	0	0	0	40	10	0	30
R-242 50%, 3 lb.	0	0	0	10	15	0	90
p-Chlorophenyl *p*-chlorobenzenesulfonate 50%, 1½ lb.	20	50	0	20	0	40	70
TETRANYCHUS MCDANIELI							
Parathion 15%, 1 lb.	7	980	974	2640[1]	3122	2234	4275
Parathion 15%, ½ lb.; DMC 25%, ½ pt.[2]	7	1466	1813	1945	73	133	53
Malathon 25%, 2 lb.	0	20	0	73	110	1600	1240
EPN 27%, 1 lb.	0	10	0	—	40	420	740
Systox 42%, 6 oz.	0	60	0	47	130	90	610
Aramite 15%, 1 lb.	0	20	0	—	50	120	240
R-242 50%, 3 lb.	0	120	0	—	130	830	1410
p-Chlorophenyl *p*-chlorobenzenesulfonate 50%, 1½ lb.	0	80	30	—	1020	2640	1850
EUROPEAN RED MITE							
Parathion 15%, 1 lb.	160	1941	2214	466[1]	420	113	93
Parathion 15%, ½ lb.; DMC 25%, ½ pt.[2]	140	2386	1373	520[1]	67	220	47
Malathon 25%, 2 lb.	300	1490	1040	27	140	180	50
EPN 27%, 1 lb.	140	490	110	—	390	450	360
Systox 42%, 6 oz.	100	20	30	0	0	30	20
Aramite 15%, 1 lb.	50	350	180	—	200	140	140
R-242 50%, 3 lb.	60	170	10	—	10	80	40
p-Chlorophenyl *p*-chlorobenzenesulfonate 50%, 1½ lb.	30	30	0	—	50	20	0

[1] Third cover applied only to parathion plots for this species.
[2] August application only. Previous applications did not contain parathion.



SUNSHINE STATE POTASH
A PRODUCT OF NEW MEXICO U.S.A.

REG. U.S. PAT. OFF.

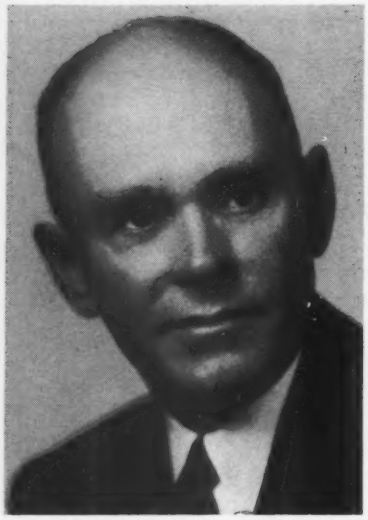
HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 60%/K_2O MIN.
MANURE SALTS 20% K_2O MIN.

These fluffy cotton bolls might very well end up as pretty summer frocks —or canvas sacks—but to the men that raised it, a bumper crop of cotton means a profit for the time and labor that was invested.

While man supplied the knowledge, the soil supplied the strength that makes all things grow. For from the soil comes strength for growing crops, the vital plant-food elements that nourish all life. And to the soil these elements must be restored.

Many of the most effective soil-replenishing fertilizers contain POTASH, often Sunshine State Potash, a product of New Mexico. Potash adds vital food elements to the soil and helps bolster crop resistance to drought and disease—makes future bumper crops possible. Yes, POTASH, a valuable profit building aid, proves a good business investment.

UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N. Y.



William R. Thurston

He's a southerner, but . . .

He Showed Them How In Missouri

By Hamilton C. Carson
Managing Editor

THE story of Thurston Chemical Co. is first of all the story of William R. Thurston. But more than that it is the story of fertilizer usage in Missouri and surrounding states, where use of plant foods in large quantities was largely stimulated by Thurston.

Consider these figures:

Missouri farmers used 80,000 tons of chemical fertilizers in 1944, the year Thurston started business in Joplin, Mo.

Now Missouri farmers use more than 500,000 tons of fertilizers a year.

Not that Thurston sells it all. He doesn't, by a long shot. But to him must go the credit for the large scale introduction of chemical fertilizers into the state.

Thurston Showed Them How

Farmers in Missouri, like all other residents of that state, have to be shown. Thurston showed them.

Thurston was a hard-working, enthusiastic employe of a Charlestown, S. C., fertilizer company in 1943 when he decided to go into business for himself.

After months of travel throughout the country to find the location for a fertilizer plant Thurston selected the Midwest. He had rejected the South as too competitive and turned to the Midwest because several states had no fertilizer plants and plant food removal was far ahead of plant food replacement in the area.

He chose a site at Atlas, Mo., seven miles east of Joplin because of a ready source of sulfuric acid at the Atlas Powder plant.

After deciding on the Middle West as a likely spot to get into the fertilizer business William R. Thurston erected this plant at Joplin, Mo.

Completed Plant

In spite of wartime restrictions on construction, scarcities of machinery, manpower and raw materials, he rushed the plant to completion in February, 1944.

At first it operated as the Missouri Chemical Co., with production of 60,000 tons of superphosphate the first year.

A year later production of complete mixed fertilizers was added, bringing annual production to 72,800 tons of fertilizer. In 1947 new construction and processes were initiated, upping the capacity to 125,000 tons.

To get the Missouri plant rolling Thurston had put a rather healthy $50,000 shoestring he had been saving since high school days with another $100,000 he got from his former boss and Charlestown friends.

By the fall of 1947 things were going so well at Joplin that he and a small group of local businessmen were able to buy the company and all properties outright from the Charlestown backers.

The swift expansion of the Thurston plant didn't stop after the purchase.

Missouri farmers, who were virtual strangers to chemical fertilizers before Thurston proved their worth, were buying 15 per cent of the materials from the thriving plant, and the young enterpriser already was looking around for further expansion.

Oklahoma seemed to be the obvious direction to turn because six years ago there was no source of fertilizer in the state.

Oklahoma's First Plant

But it soon got its first fertilizer plant, when Thurston and his associates moved into Tulsa with a branch unit. By April, 1948, the plant was producing mixed fertilizers.

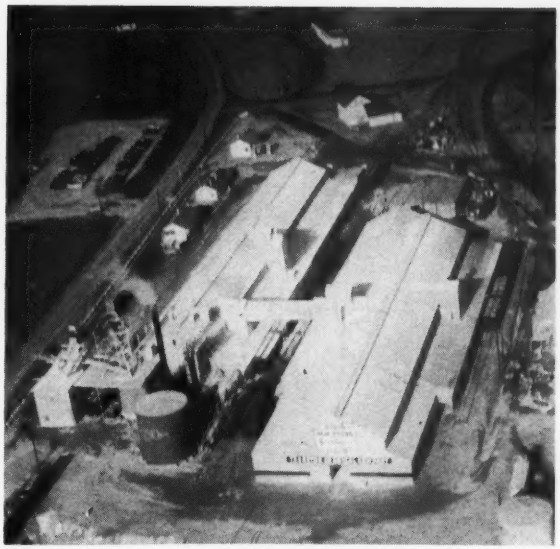
In May of that year, with the Tulsa plant bringing total annual capacity to 225,000 tons, The Missouri Fertilizer Co. and the tentatively named Oklahoma Chemical Fertilizer Co. were combined under the present name.

Next stop on the Thurston line was Lawrence, Kan., where the company purchased in 1950 the Kaw River Valley Fertilizer Co., Inc., adding another 25,000 tons to annual capacity.

Latest plant to be opened by the rapidly expanding organization was the Trenton, Mo., unit, last August to serve the rich agricultural area of northern Missouri and Iowa. It has an annual capacity of 25,000 tons.

After eight years of expanding in all directions of the Midwest, Thurston came back to the home plant in Joplin last fall for his most ambitious expansion to date.

The company is spending $2,500,000 on new units at the Missouri location. Already in operation is a sulfate of ammonia unit with a rated annual capacity of 16,500 tons.



End view of the Thurston plant at Atlas, Mo. The now widely-known "BEM" trademark can be seen.

Construction In Progress

Under construction are a triple superphosphate unit with a rated annual capacity of 35,000 tons, a storage building measuring 120 by 220 feet for triple superphosphate and a phosphoric acid unit with a capacity of 140 tons a day.

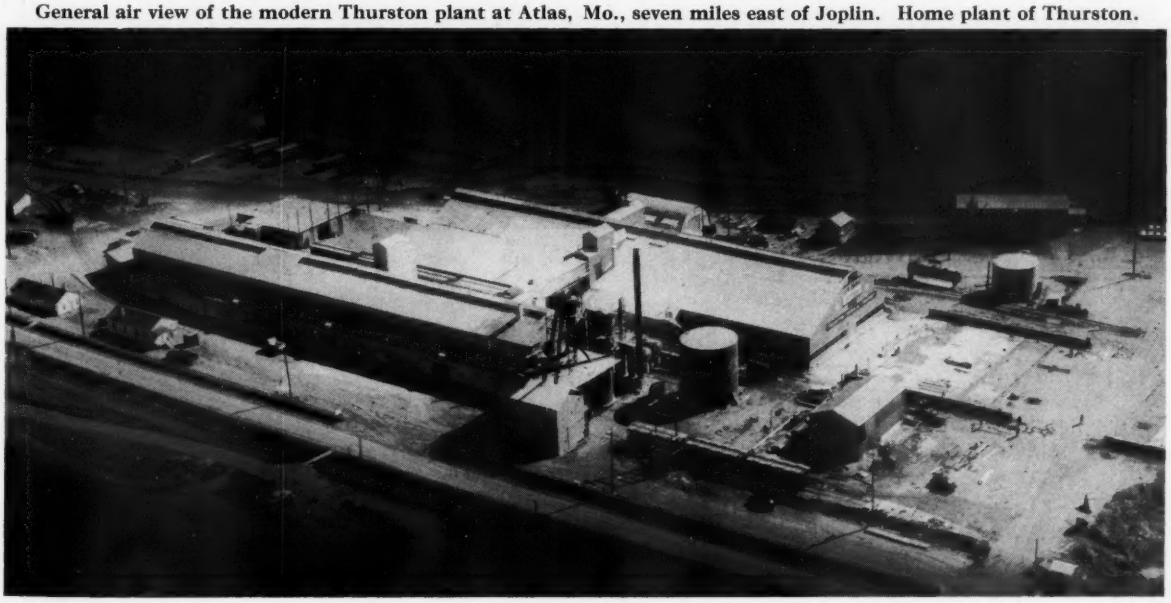
Sulfate of ammonia and triple super will be used primarily for manufacture of mixed grades of fertilizer of high analysis.

In charge of design and erection of the two units is the John J. Harte Co., of Atlanta.

Chemical Construction Corp., of New York City, is building the phosphoric acid unit.

Also underway are engineering studies for the

General air view of the modern Thurston plant at Atlas, Mo., seven miles east of Joplin. Home plant of Thurston.



Phillips supplies NITROGEN in 4 forms

1 AMMONIUM SULFATE

Phillips *66* Ammonium Sulfate is available *now!* It's *dry*-cured to remove excess moisture—prevent caking. Uniform crystals flow freely—mix easily. Contains 21% nitrogen, ideal for all analyses of mixed goods and for direct application to all farm crops. Contact us now for your requirements.

2 ANHYDROUS AMMONIA

Tank car shipments of Anhydrous Ammonia (82% nitrogen) are assured to Phillips contract customers by Phillips huge production facilities in the Texas Panhandle. Write our nearest district office for full information.

3 NITROGEN SOLUTIONS

Get more N per dollar! Phillips *66* Nitrogen Solutions are well suited to the preparation of high-analysis fertilizers and the ammoniation of superphosphate. These three nitrogen solutions keep handling costs low! Promote rapid, thorough curing!

4 AMMONIUM NITRATE

Phillips *66* Prilled Ammonium Nitrate contains 33% nitrogen. The small, coated prills or pellets resist caking . . . handle easily. Depend on Phillips *66* Prilled Ammonium Nitrate for uniform, free-flowing properties and top-notch crop response.

Phillips 66

PHILLIPS CHEMICAL COMPANY

A Subsidiary of Phillips Petroleum Company

FERTILIZER SALES DIVISION · BARTLESVILLE, OKLAHOMA

DISTRICT SALES OFFICES:

NORFOLK, VA.—610 Royster Bldg. • TAMPA, FLA.—7 Terrace Office Bldg.
HOUSTON, TEX.—604 City National Bank Bldg. • AMARILLO, TEX.—First National Bank Bldg. • OMAHA, NEB.—WOW Bldg.
PASADENA, CALIF.—604 Citizens Bank Bldg. • NEW YORK, N. Y.—80 Broadway • BARTLESVILLE, OKLA.—Adams Bldg.

erection of a nitric phosphate unit.

Some idea of the magnitude of the expansion program can be seen from the following figures:

When the project is completed movement of freight into the Atlas plant will be doubled.

Last year movement of raw material into the plant required 1,600 freight cars. This year an estimated 3,200 cars will be required. Additional switches, spurs and sidings already have been installed to handle the increased movement.

Approximately 350,000 cubic feet of gas per day will be required in the new process, along with 250,000 gallons of water. Two carloads each of phosphate rock and sulfuric acid will move into the plant daily. This will mean 100 tons of sulfuric acid and 120 tons of phosphate rock daily in excess of present requirements.

Operating in Seven States

Thurston now operates regularly in all or part of seven states, including Missouri, Kansas, Oklahoma, Arkansas, Iowa, Nebraska and Illinois.

A considerable amount of shipping is done also in Minnesota and North and South Dakotas. Fertilizer has been shipped to every state west of the Mississippi from the Joplin plant, the company boasts.

The company employs 400 persons to carry out all phases of its operations. Of these approximately 50 are located at the company's modern offices in Joplin.

How did Thurston do so much in 10 years? Probably the answer lies in his dynamic business ability and in his intimate knowledge of the needs of farmers for chemical fertilizers to raise crop yields and Bring Extra Money, as the Thurston slogan proclaims.

He has been serving business and agriculture for 29 years, ever since the days when he was a time clerk for the American Agricultural Chemical Co. in Charlestown at the age of 16.

One of Many Activities

Making BEM brand fertilizers, however, is just one of many activities carried on by Thurston.

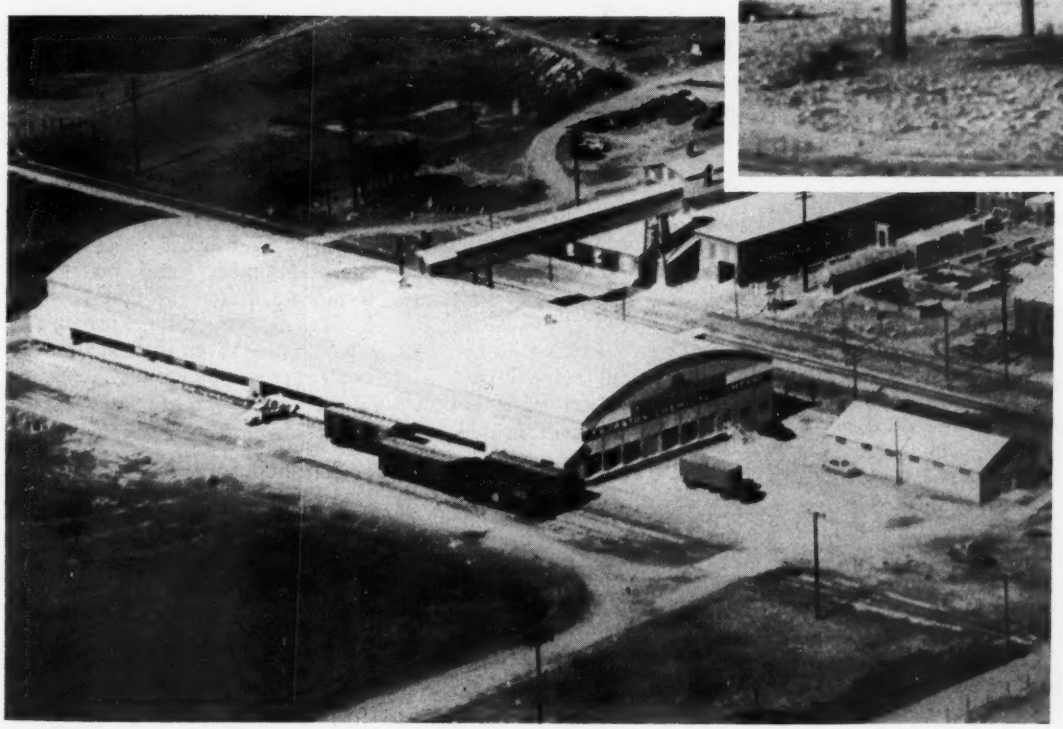
He's a director of the United States Chamber of Commerce, The American Plant Food Council, a member of the chambers of commerce of Joplin and five other cities and states, the former Mixed Fertilizers Industry, Advisory Committee, which functioned under the OPS and the Phosphatic Fertilizers Industry Advisory Committee, under the NPA.

In addition Thurston is an active member of more than a score of business, service and social organizations in South Carolina, Missouri and nearby areas.

Quite a busy man. ◆

Taking the initials of his children's names, Thurston came up with the "BEM" trademark. Product "Brings Extra Money."

Expansion was inevitable with such a progressive organization as Thurston Chemical Co. Here's the Tulsa, Okla. unit.



One species of horse fly feeds only on legs. Note specimens on front legs here.

Man captures deer flies feeding on calf which was injected with lindane. Most of these flies die in a few hours after taking blood.

Now on animals . . .

Systemic Pesticides Kill Cattle Grubs

Farm Chemicals Staff Report

INSECTICIDE injections for livestock to kill cattle grubs is the latest news in the field of systemic pesticides.

Preliminary success in the new field has been announced by the U. S. Department of Agriculture. According to the department exploratory research has shown that grubs can be killed with injections of aldrin, dieldrin and lindane into livestock.

The Department, in reporting the tests with cattle injections, emphasized that all results are preliminary and that the practical use of chemical injections to control grubs on farm or ranch now is no more than a possibility.

Problems Remain

Facing Department researchers are several key problems that dim any immediate optimism concerning systemics.

They need to find out whether the injections will be economical to use and whether they can be administered with complete safety. Answers are being sought in continuing cooperative research by the Bureau of Entomology and Plant Quarantine and the Bureau of Animal Industry at the BEPQ laboratory in Kerrville, Tex.

Actually, research with the systemics for cattle started back in 1947, with announcement by USDA that experimental work in the control of disease carrying insects "shows that it is possible in some cases to kill these pests by feeding to animals certain chemicals which will make the blood of the animals deadly to the blood sucking insect pests that prey on them."

Laboratory animals, including rabbits, were used in the 1947 research, which was carried on at the Orlando, Fla., lab of the BEPQ. It was reported by E. F. Knipling, R. C. Bushland, F. H. Babers, G. H. Culpepper and E. S. Raun.

They used DDT, pyrethrum, rotenone and other pesticides in the experiments and made the significant statement that there is little or no relationship between the effectiveness of an insecticide as a contact poison and as a systemic.

Continuing Research

Continuing research was reported last December in Philadelphia by Dr. A. W. Lindquist, USDA entomologist, who described latest findings at the meeting of the Entomological Society of America.

Dr. Lindquist said that in cooperation with the Oregon Agricultural Experiment Station, the USDA was exploring the possibility

Photo above shows an animal which has not been injected with a systemic pesticide. Note number of horse flies feeding on the head and legs.

Exposing mosquitoes on calf injected with lindane. Note number in jar.

of insect control "in a search for ways to save the millions of dollars worth of milk and meat lost to insect pests each year."

The entomologist outlined research with cattle injections to control several external parasites, including flies, mosquitoes and lice. In addition to the three insecticides mentioned in the latest USDA report, Dr. Lindquist said allethrin and heptachlor also showed effectiveness.

Economic importance of controlling cattle grubs and other parasites was given in the most recent USDA report on the systemics for cattle.

The Department estimates that the grubs cause an annual loss of $100 million through annoyance of animals and damage to meat and hides.

Using aldrin, dieldrin and lindane, USDA scientists found that treating yearling cattle during the past year with four injections of any one of the chemicals gave excellent control against grubs.

The injections were started when the grubs began to appear as bumps under the skin in the backs of the cattle. They were repeated at 28-day intervals.

Solutions Injected

The insecticides were injected as solutions beneath the animal's skin and were carried by the bloodstream as systemics to all parts of the animal's body. As the grubs reached the animal's back and started to feed heavily on the flesh, they dosed themselves automatically with the insecticide.

Many of the larvae died soon after they reached the animal's back while others continued their normal life cycle, cutting their way through the hide and dropping to the ground to pupate.

Doses of the three insecticides were as follows: for aldrin and lindane, 50 mgs. per kg. of animal weight, or approximately a half ounce per animal; for dieldrin, 25 mgs. per kg., or approximately ¼ ounce per animal.

Continuing research with cattle injections eventually may help farmers maintain healthier and higher producing animals. And it may open another important field to farm chemicals manufacturers. ◆

Another photo showing capture of deer flies on calf injected with lindane. Experiments were conducted by U. S. Department of Agriculture.

Berkshire

. . . . . specialists in magnesia for agriculture

EMJEO (80/82% Magnesium Sulphate)
Calcined Brucite (fertilizer grade) 70% MgO
Calcined Magnesite 85 to 95% MgO

POTNIT
(95% Nitrate of Potash)
for
Special Mixtures and Soluble Fertilizers
Other Fertilizer Materials

INSECTICIDES — FUNGICIDES
Mercury Compounds
for Agricultural Use

DITHIOCARBAMATES
Ferric—Zinc

Export — Import

Berkshire Chemicals, Inc.
420 Lexington Avenue, New York 17, N. Y.
Cable Address—"Berkskem" New York
Sales Agents for F. W. Berk & Company, Inc.

STEDMAN

FERTILIZER PLANT EQUIPMENT

Established in 1834

All Steel Self-Contained Fertilizer Mixing and Bagging Units

Batch Mixers — Dry Batching
Pan Mixers — Wet Mixing

Tailings Pulverizers — Swing Hammer and Cage Type

Dust Weigh Hoppers

Vibrating Screens — Acid Weigh Scales

Belt Conveyors — Stationary and Shuttle Types

Bucket Elevators — Batching Hoppers — Hoppers and Chutes

STEDMAN FOUNDRY & MACHINE COMPANY, INC.
Subsidiary of United Engineering and Foundry Company
General Office & Works: AURORA, INDIANA

Selected for Your Standards of Quality

FROM EVERY CORNER OF THE WORLD . . .

POTASH

MURIATE
SULPHATE
NITRATE

NITROGEN

SULPHATE OF AMMONIA
AMMONIUM NITRATE
CALCIUM AMMONIUM NITRATE
UREA

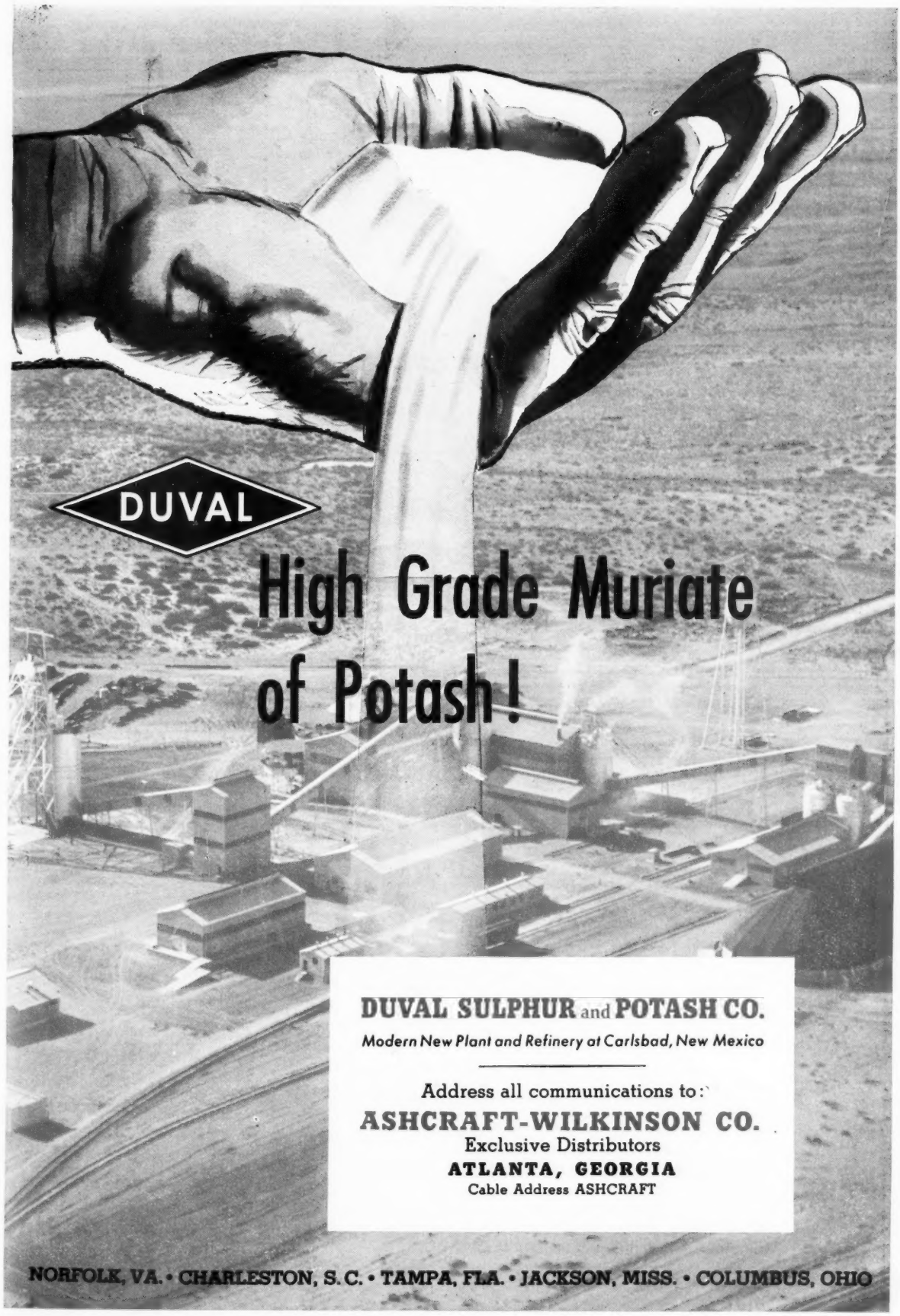
. . . and ALL OTHER FERTILIZER and FEED MATERIALS

IMPORTERS • EXPORTERS • BROKERS • COMMISSION MERCHANTS

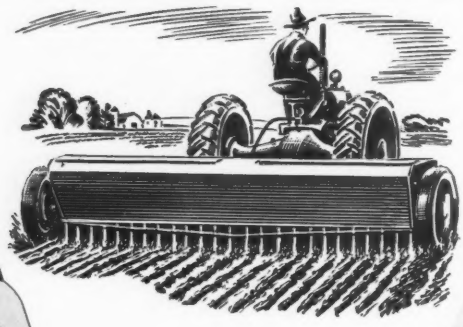
1873 — 80TH ANNIVERSARY — 1953

Woodward & Dickerson Inc.

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA., U.S.A.
TELEPHONE: LOcust 4-5600 Cable Address: "Woodward" TELETYPE: PH109


DUVAL
High Grade Muriate of Potash!
DUVAL SULPHUR and POTASH CO.
Modern New Plant and Refinery at Carlsbad, New Mexico
Address all communications to:
ASHCRAFT-WILKINSON CO.
Exclusive Distributors
ATLANTA, GEORGIA
Cable Address ASHCRAFT
NORFOLK, VA. • CHARLESTON, S.C. • TAMPA, FLA. • JACKSON, MISS. • COLUMBUS, OHIO

MORE FARMERS USE ARMOUR'S



ARMOUR FERTILIZER WORKS

General Office
P. O. Box 1685
Atlanta 1, Georgia

29 FACTORIES CONVENIENTLY LOCATED TO SERVE YOU

Albany, Ga.
Atlanta, Ga.
Augusta, Ga.
Baltimore, Md.
Bartow, Fla.
Birmingham, Ala.
Carteret, N.J.
Chicago Heights, Ill.
Cincinnati, Ohio
Columbia, S.C.
Columbus, Ga.
Dallas, Texas
E. St. Louis, Mo.
Greensboro, N.C.
Houston, Texas
Jacksonville, Fla.
Jeffersonville, Ind.
Montgomery, Ala.
N. Kansas City, Mo.
Nashville, Tenn.
New Orleans, La.
Norfolk, Va.
Presque Isle, Me.
Sandusky, Ohio
Sigio, Tenn.
Wilmington, N.C.
Winona, Minn.

Also sales offices in Havana, Cuba and San Juan, Puerto Rico

ALEX M. McIVER — Established 1915 — H. H. McIVER

ALEX. M. McIVER & SON

BROKERS

SPECIALIZING

- Sulphuric Acid
- Sulphate of Ammonia
- Blood and Fertilizer Tankage
- Phosphate Rock
- Castor Pomace
- Potash
- Calcium Ammonium Nitrate
- Ground Rice Hulls
- Ammoniated Base and Superphosphate

REPRESENTATIVES: MORGAN BROS. BAG COMPANY,

BURLAP BAGS — PAPER BAGS — COTTON BAGS

GROUND COTTON BUR ASH, 38/42% K_2O POTASH

Peoples Office Building — Charleston, S. C.

Phones: L. D. 921-922

How You Can Get

Free Information

On each of the two postage-paid postcards below you can request further information on four items described on this and the Industrial News section of this issue. ***Fill out one quarter section for each item in which you are interested.***

7-4 Sackett Plants

Many farm chemicals plants have selected Sackett to design, construct and equip their plants. Sackett recently completed custom engineering a plant for NACO Fertilizer Co. in Florida. Information from the company describes their construction and fittings. **Code Number 7-4.**

7-5 Resistant Cement

Various types of cements, for use to prevent corrosion in the handling of many types of chemicals, are described in a pamphlet just published by Pennsalt. It is in the form of a chart which shows the corrosion resistance of the cements to 297 chemicals. The chart indicates that Pennsalt has a cement mortar which is resistant to the chemical attack of every one of the chemicals except sodium hypochlorite. The chart is intended as a guide to engineers and purchasing agents. **Code Number 7-5.**

7-6 Protective Coatings

Information on new formulations which can be sprayed on to provide extra thick chemical-resisting coatings on steel and other metals is available in a booklet put out by United Chromium, Inc. The products, called Unichrome 5300 Coatings, are used to protect equipment against acids, alkalies, salts, oxidizing agents and many other corrosives. Company claims the new product permits spray application of films of much greater thickness than has been obtained in the past. **Code Number 7-6.**

7-7 Protective Hoods

A two-page illustrated sheet put out by Mine Safety Appliances Co., describes the line of protective hoods, designed especially for use with the company's dust, paint and chemical respirators. Fertilizer safety officials have recommended use of hoods and respirators under

Use card at right to get information on products and bulletins. For additional requests write FARM CHEMICALS on company stationery, giving appropriate Code Numbers.

- 7-1 Maracarb N
- 7-2 Combination Chain
- 7-3 Bulk Packing System
- 7-4 Sackett Plants
- 7-5 Resistant Cement
- 7-6 Protective Coatings
- 7-7 Protective Hoods
- 7-8 Soil Test Kit
- 7-9 Emulsion Stabilizers
- 7-10 Sweco Separator
- 7-11 Asphaltic Coatings
- 7-12 Hoist Dump Trailers
- 7-13 Cyanamid Malathon
- 7-14 Tergitol Dispersant
- 7-15 Hagafilm
- 7-16 Wyandotte Chemicals
- 7-17 Urea Process

FILL OUT READER SERVICE CARDS

FARM CHEMICALS Code Number ☐

Name.....
Title.....
Company.....
.....
Co. Address.....
.....

FARM CHEMICALS Code Number ☐

Name.....
Title.....
Company.....
.....
Co. Address.....
.....

FARM CHEMICALS Code Number ☐

Name.....
Title.....
Company.....
.....
Co. Address.....
.....

FARM CHEMICALS Code Number ☐

Name.....
Title.....
Company.....
.....
Co. Address.....
..... 53-7

☐ 1 Year—$3

☐ 2 Years—$5

Canada and Mexico, 1 Year—$4

Foreign, 1 Year—$5

☐ Remittance Enclosed

☐ Bill Me

☐ Bill Company 53-7

Enter my subscription to Farm Chemicals now . . .

Name.....
Position.....
Company.....
Type Business.....
Address.....
.....

certain plant conditions. This line includes several hoods with application in the industry. **Code Number 7-7.**

7-8 Soil Test Kit

LaMotte Chemical Products Co. has information available on a new soil acidity test. Pictures and technical data on the pocket-size soil test unit are included. The company has been manufacturing soil testing equipment for 35 years. **Code Number 7-8.**

7-9 Emulsion Stabilizers

Unique stability can be imparted to oil-in-water emulsions through the use of a group of lignosulfonate surfactants called Marasperse, the Marathon Corp. states in recent literature. The Marasperses differ from conventional emulsifiers, it states, in that they have little effect on interfacial tensions. When properly used they can render the emulsions very stable to temperature variations, *p*H changes, electrolytic contamination and mechanical handling. **Code Number 7-9.**

7-10 Sweco Separator

The Sweco Separator, providing efficient single or multiple deck screening from coarse particles to as fine as 325 mesh is a self contained unit with only three moving parts, according to a company booklet. Pesticide manufacturers may be interested in further information on the unit, which is claimed to have greater efficiency, relative capacity and range of effective use than any screening device in the field. **Code Number 7-10.**

7-11 Asphaltic Coatings

If you are interested in asphaltic coatings for your plant, you will be interested in checking a new booklet from Spring Packing Corp., describing their coatings, which contain an exclusive additive that permits application over damp surfaces. Hence waterproof or anti-corrosive coatings can be applied under moist or excessively humid conditions. Complete protection is assured for equipment and buildings. **Code Number 7-11.**

7-12 Hoist Dump Trailers

Information from Hercules Steel Products Corp. describes two new telescopic hoist dump trailer units specially designed to increase legal payloads and improve dumping performance. The units are a 17-foot, single axle trailer with 10 to 17 cubic yards' capacity and a 20-foot, tandem axle unit with a capacity range from 12 to 26 cubic yards. Extreme front mounting of the three and four sleeve twin telescopic hoisting mechanisms is featured. **Code Number 7-12.**

7-13 Cyanamid Malathon

American Cyanamid claims its Malathon will kill flies that are resistant to DDT and other chlorinated hydrocarbons. Descriptive literature on the technical organic insecticide says it has restored meaning to the phrase "to die like flies." Data on various sprays and technical information on the product is included. **Code Number 7-13.**

7-14 Tergitol Dispersant

Tergitol dispersant NPX, a non-ionic surface-active agent with outstanding detergent, dispersing and emulsifying properties, is described in a new six-page technical information sheet just released by Carbide and Carbon Chemicals Co. It includes information on physical properties, solubility, wetting power, stability and applications. **Code Number 7-14.**

7-15 Hagafilm

A film-forming amine called Hagafilm can effectively control corrosion in steam condensate systems according to a bulletin from Hagan Corp. The material is fed to the boiler in small amounts of two to three pounds per million pounds of steam. **Code Number 7-15.**

7-16 Wyandotte Chemicals

Conveniently located warehouses and 63 years of service are just two of the many advantages of buying farm chemicals basic materials from Wyandotte Chemicals Corp., according to descriptive literature from the company. It describes the company's line, including DDT, BHC, lindane, kreelon and pluronics. **Code Number 7-16.**

7-17 Urea Process

The market for urea as a farm chemical is well known, but the special Chemical Construction Corp. process may not be to some industry personnel. A booklet describes the method which has overall ammonia efficiency of 97 per cent with conversion of ammonium carbamate to urea being approximately 76 per cent. Complete technical information on the product is included. **Code Number 7-17.**

Reader Service inquiries will be honored up to six months after date of publication of the magazine in which they appear.

FILL OUT READER SERVICE CARDS

FIRST CLASS
PERMIT No. 386
Sec. 510, P. L. & R.
Philadelphia, Pa.

BUSINESS REPLY CARD
No Postage Necessary if Mailed in the United States

Postage Will Be Paid By

FARM CHEMICALS
317 North Broad Street
Philadelphia 7, PA.

FIRST CLASS
PERMIT No. 386
Sec. 510, P. L. & R.
Philadelphia, Pa.

BUSINESS REPLY CARD
No Postage Necessary if Mailed in the United States

Postage Will Be Paid By

FARM CHEMICALS
317 North Broad Street
Philadelphia 7, Pa.

Research at Maine shows fungus disease is harder to check with sulfur but

New Fungicides Control Apple Scab

INSECTS aren't the only things that can build up resistance to pest control chemicals.

At least research at the Maine Agricultural Experiment Station indicates that a fungus disease—apple scab—may be getting harder to control with sulfur in the same way flies, mosquitoes and body lice are becoming harder to control with DDT.

That opinion has been expressed by several research workers in the Northeast, according to Dr. Merle Hilborn, plant pathologist at the station.

But even though the scab fungus, which takes a large toll of the crop each year in the Northeast area, may be developing resistance, the picture for control is encouraging, according to Dr. Hilborn.

New Fungicides

Reason is the development in the past few years of new spray chemicals that are more effective than sulfur in controlling the disease.

Among the successful newer fungicides are Phygon, Puratized and Fruit Fungicide 341, the Maine pathologist reported.

Dr. Hilborn doesn't claim to know the reasons for the improved control with the materials. One possible explanation, he states, is that the new fungicides still are too new for the scab to have built up resistance to them.

Sulfur is by no means out of the picture for control of the fungus disease, he added. Good control of the scab in experiments carried out at the Maine station has been obtained with a combination of sulfur and some of the newer materials.

Comparative tests conducted during the past three years show the following results:

Five per cent of fruit on trees sprayed with sulfur at eight pounds per hundred gallons was scabby;

Less than one percent of fruit was scabby on trees sprayed with a mixture of four gallons and half the recommended amount of one of the newer fungicides.

Dr. Hilborn said the same results were obtained with ferbam, nabam and Bioquin I.

More Tests Planned

The Maine station is planning additional experiments with the fungicidal materials, with research expanded to include many of the new antibiotics such as penicillin, streptomycin, aureomycin, chloromyocetin and terramycin.

A good summary of work in the field of apple scab control is given in an article by Dr. Hilborn appearing in the Maine station's quarterly report of progress.

Extract of the article:

In the early experiments for control of apple scab, Bordeaux and lime sulfur were used. Bordeaux soon was discarded because of spray injury.

Approximately 30 years ago mild sulfur was brought into apple spraying experiments. It was shown to be an effective substitute for lime sulfur and to be much less harmful to the trees.

Split schedules were used then in which lime sulfur was applied in the early part of the season and mild sulfur in the cover sprays.

In recent years organic fungicides have come into prominence. Studies by the experiment station have shown that several of these materials merit a place in the apple scab control program.

'Eradicant' Sprays

Phenyl mercury compounds, sold under such trade names as Puratized Agricultural Spray, Tag Fungicide 331 and several others, have become widely used as "eradicant" spray materials.

Much of the scab may be killed out if the spray is applied shortly after the spots appear on the foliage.

Puratized also is effective in killing scab if the spray is applied shortly after infection has begun. Spray application may be delayed as much as 40 to 60 hours after rainy weather has made infection possible. Scab control has been excellent even when spray applications were delayed.

During a six-year period of testing Puratized, the fruit has never been more than about one per cent scabby.

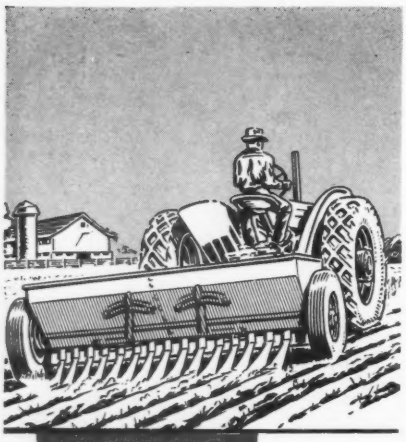
Sulfur generally has been used in the cover applications since Puratized should not be used after the first cover spray because of the danger of mercury residue on the fruit.

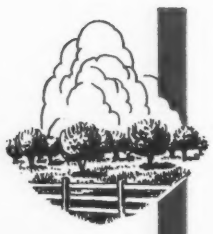
Phygon does not show the "eradicant" property of Puratized but does show excellent control of scab even though spray applications are delayed for about 40 hours. In a five year testing period trees sprayed with Phygon have usually produced fruit with less than one per cent scab.

Mottling Possible

Because Phygon may cause a foliage mottling when used in the cover sprays, it would seem advisable in commercial practice to use a milder fungicide in the late cover applications.

Crag Fruit Fungicide 341 has shown considerable promise in apple spray work because it not only





TENNESSEE CORPORATION

MINERAL SALTS

COPPER SULPHATE

ZINC SULPHATE

MANGANESE SULPHATE

MAGNESIUM SULPHATE

BORON

FERRIC IRON SULPHATE

Minerals are just as essential to healthy plant growth and optimum production of vitamin-rich crops as are nitrogen, potash and phosphate. Mineralized fertilizer stimulates sales and creates new business because the results are conclusive. Fertilizers that give superior results are the fertilizers that the growers buy.

As basic producers of minerals, we would like to discuss mineralized fertilizer with you and show you how to increase your fertilizer tonnage and profits by the addition of minerals.

We can supply mineral mixtures to your own specifications in large or small quantities.

SOLUBLE TRACE MINERALS

Tennessee's trace minerals are soluble and their nutritional value is immediately available to the plant. Soluble trace minerals are more economical and faster acting.

For detailed information, phone, wire or write—

TENNESSEE CORPORATION

617-29 Grant Building, Atlanta, Georgia

is a good fungicide but also favors beneficial insects.

On the other hand the more commonly used fungicides, for example, kill the beneficial insects that keep European red mites at a low population level. Fruit Fungicide 341 apparently is finding a place in the commercial spray program, particularly in the clover applications when red mite populations may cause severe injury.

Ferbam, sold under such trade names as Fermate, Niagara Carbamate and many others, has been found to merit a place in the apple spray program, particularly on those varieties that are subject to apple and quince rust. Better fruit finish also may result when ferbam is used on those varieties that are susceptible to spray russet.

Current experimentation with fungicides also considers the effect of the spray material on the chlorophyll content of the foliage because chlorophyll in the foliage manufactures carbohydrates which are necessary for growth and bud formation.

Increases Chlorophyll

Leaves sprayed with some of the organic fungicides contain more chlorophyll than leaves sprayed with sulfur.

Various mixtures of fungicides are being used experimentally in an attempt to combine some of the outstanding features of these organic materials, particularly with respect to their eradicant action on scab, lack of toxicity to beneficial insects and ability to promote foliage of high chlorophyll content.

Mixtures of Puratized and 341 have given excellent control of early season scab.

Mixtures of various fungicides containing ferbam as the main ingredient, when used in the cover applications, have resulted in foliage with a higher chlorophyll content.

Experiments over the past five years have shown that adequate scab control is possible with concentrate mist spray because crops have been carried to maturity with less than one per cent scab on a concentrate mist spray schedule. It is to be expected that concentrate mist spraying will continue to develop and be much improved. ◆

American Potash Institute figures graphically show

How the Potash Industry Has Performed Since 1935

By J. W. Turrentine
American Potash Institute

THE unabated demand for potash statistics prompts the following tabulations. While the American Potash Institute maintains numerous tabulations in up-to-date form, issued quarterly and annually, they frequently fail to meet the requirements of specific questions. Furthermore, they are not always comparable in the absence of clearly defined bases.

For example, as is well known, there are numerous bases on which tabulations have been made both within and outside of federal statistical agencies, such as production and sales, which cannot be expected to conform with the American Potash Institute delivery data. Then there are three sorts of years —calendar, fiscal and fertilizer years—which are not always comparable.

Complex Figures

Consumption is something else again, differing from deliveries and complicated by imports. Deliveries, while expressing over-all consumption, are complicated by exports. Federal export data fail to differentiate between primary producers and brokers. Too frequently there is the failure to differentiate clearly between potash as K_2O and potash salts.

Performance of the American potash industry as indicated by deliveries during years since 1935 is shown in this report from the American Potash Institute.

FARM CHEMICALS *presents the report with three of seven tables included. All years are calendar years and each table is restricted, as far as possible, to a single topic. For other tables on exports and deliveries broken down as to grades and categories, complete copies of the report may be obtained from the Institute.*

J. W. Turrentine

Accordingly, this effort to reorganize some of our statistical tabulations with a view to simplification seems justified, and in so doing the logical starting point would seem to be the statistics of the American potash industry exclusively.

Furthermore, it would appear logical to reduce the number of tabulations so that they more expeditiously can be kept up-to-date. For example, the various compilations of potash statistics, domestic and foreign, to be found in the book, "Potash in North America" written in 1943, already are noncurrent by some 10 years. Obviously a book cannot be republished every time its data need to be brought up-to-date.

The most complete potash statistics from the American viewpoint are those appearing in the "Minerals Yearbook of the U. S. Bureau of Mines," for many years a standard book of reference. The chapter on "Potash" covers production, sales and values by the American industry and American imports, exports and consumption.

A similar annual, "The Mineral Industry," published by McGraw-Hill and discontinued with the 1941 issue (Vol. 50) likewise contained a chapter on potash prepared for many years by the present writer, succeeded by Dale C. Keiffer of the Institute staff.

Extended Statistics

The annual, semi-annual and quarterly summaries of delivery figures issued by the American Potash Institute go a long way toward meeting our statistical needs. For the sake of convenience and ready reference they are extended herein to cover longer periods.

Full reliance is placed on these delivery figures as the authentic expression of the performance of the American Potash Industry.

In the case of the five member companies of the Institute, they represent sales that have been accomplished by actual deliveries within the specific period covered and are carefully checked for their accuracy. Figures submitted by the

non-member companies likewise are accepted as equally reliable.

During recent years of accentuated potash demand and orderly year-round shipments, deliveries may be taken to express production, except for recurrent temporary limitations on shipping facilities, such as box-car shortages.

USDA Statistics

For more specific and detailed statistics on potash consumption, as for example an ingredient of mixed goods or as the material, and by states, reliance remains placed on the U. S. Department of Agriculture whose painstaking and highly informative summaries prepared by A. L. Mehring, in former years and currently by Walter Scholl and associates have been accepted as the best obtainable.

Therein, of course, there can be no differentiation between American and imported potash. (The latter since 1950 becoming more of a factor than in previous years.)

Data Restricted

In the tabulations, an effort is made to restrict the data to those that apply specifically to the American industry. This means principally the exclusion of imports. Furthermore, an attempt is made to so label the tables that their contents are obvious at a glance. Because main reliance is placed on delivery figures reported to the American Potash Institute, the tabulations as a rule do not go beyond 1935, the year of its organization. Earlier statistics are to be found in the three publications mentioned in preceding paragraphs.

Table 1 includes all the potash salts shipped from the American mines and refineries. Included are exports (by the producers) and chemical salts. It is believed that total tons of salts is a truer expression of production performance than is K_2O, particularly among those less familiar with fertilizer terminology.

Included in Table 1 are exports of potash salts by primary producers.

Table 5 shows tonnages of K_2O delivered for agricultural use within the continental United States, again restricted to the deliveries by the American producers. The designation "Continental United States" indicates the exclusion of Puerto Rico and Hawaii.

State Breakdown

Table 7 presents U. S. deliveries of agricultural potash (K_2O) of American origin by states for the years 1942–52 inclusive, the war and post-war years of major expansion in American potash production. ◆

TABLE 1.—Total Deliveries of Potash Salts of American Origin

(In tons of 2,000 lbs. of salts, calendar years)

Year	60% Muriate Tons	50% Muriate Tons	Manure Salts Tons	Sulfates Tons	Totals Tons
1936	384,138	36,442	34,563	—	455,143
1937	326,210	42,520	33,172	—	401,902
1938	381,053	71,045	16,193	114	468,405
1939	461,979	102,803	13,788	10,913	589,483
1940	512,495	82,429	16,263	41,856	653,043
1941	652,554	89,341	127,890	81,842	951,627
1942	877,319	83,990	192,082	108,890	1,262,281
1943	920,204	100,856	213,210	139,476	1,373,746
1944	1,063,216	104,374	204,110	159,839	1,531,539
1945	1,146,029	128,268	140,819	169,757	1,585,473
1946	1,241,253	126,924	90,677	198,750	1,657,604
1947	1,393,760	138,262	184,224	219,563	1,935,809
1948	1,489,773	144,724	269,149	228,935	2,132,581
1949	1,468,362	177,787	180,578	212,181	2,038,908
1950	1,780,872	137,238	19,363	255,278	2,192,751
1951	1,961,469	155,144	18,600	276,282	2,411,495
1952	2,311,159	143,963	8,354	273,686	2,737,162

TABLE 5.—Deliveries of Agricultural Potash (K_2O) of American Origin —Continental United States by Grades

(In tons of 2,000 lbs. K_2O, calendar years)

Year	60% Muriate Tons	50% Muriate Tons	Manure Salts Tons	Sulfates Tons	Totals Tons
1937	160,474	22,499	8,219	None	191,192
1938	168,373	36,281	4,499	59	209,212
1939	184,747	40,102	3,734	4,815	233,398
1940	241,598	41,850	4,233	16,570	304,251
1941	307,897	44,016	28,627	29,948	410,488
1942	433,422	40,780	40,068	42,140	556,410
1943	431,146	48,420	49,006	45,730	574,302
1944	503,082	50,266	47,971	50,941	652,260
1945	545,429	61,352	34,464	53,831	695,076
1946	615,098	61,585	21,453	65,454	763,590
1947	694,534	67,714	45,005	64,846	872,099
1948	750,474	70,803	67,136	70,729	959,142
1949	761,685	87,089	45,205	60,964	954,943
1950	926,603	68,626	4,868	77,815	1,077,912
1951	1,041,028	77,948	4,648	84,590	1,208,214
1952	1,256,452	72,204	2,061	88,885	1,419,602

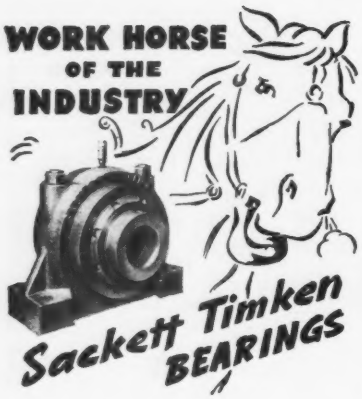
TABLE 7.—Deliveries of Agricultural Potash (K_2O)

American Origin by States

(In tons of 2,000 lbs. K_2O, calendar years)

	1952 Tons	1951 Tons	1950 Tons	1949 Tons	1948 Tons	1947 Tons	1946 Tons	1945 Tons	1944 Tons	1943 Tons	1942 Tons
Ala.	59,984	55,670	45,393	42,333	37,541	35,970	28,319	25,636	25,036	24,243	20,996
Ariz.	402	371	914	956	742	222	70	—	—	—	—
Ark.	35,859	39,341	28,121	19,873	19,057	13,535	9,572	7,801	7,421	9,255	8,280
Cal.	13,776	16,918	18,154	13,443	19,568	19,517	12,607	11,381	10,412	9,037	9,113
Colo.	888	867	912	937	910	641	505	222	206	75	68
Conn.	4,009	4,278	4,974	4,182	4,570	5,020	5,033	4,703	4,465	3,645	4,309
Del.	5,946	4,229	3,965	4,538	3,863	3,654	3,851	3,112	3,494	3,446	3,814
D. C.	147	121	187	125	119	97	142	84	74	125	118
Fla.	74,982	70,451	60,476	62,226	59,595	60,032	62,389	57,354	51,871	43,436	41,519
Ga.	102,941	84,876	77,681	80,533	85,897	81,021	70,709	64,816	64,519	59,983	54,233
Idaho	347	271	355	257	267	286	277	264	115	61	1
Ill.	168,826	136,783	114,279	78,547	83,111	77,486	64,222	55,916	45,911	30,518	23,778
Ind.	105,802	90,092	73,593	56,471	54,472	48,990	39,615	36,852	35,434	26,887	27,172
Iowa	23,463	21,855	19,240	13,551	13,403	5,416	2,691	828	660	737	790
Kansas	2,260	1,887	1,370	779	313	88	24	—	—	—	—
Ky.	28,825	21,640	19,171	13,783	12,352	8,264	8,661	6,691	5,812	5,513	3,684
La.	25,397	20,546	24,742	19,054	19,338	17,748	16,984	13,371	14,671	14,287	12,856
Maine	8,604	7,053	9,309	13,212	15,934	16,810	14,074	14,479	14,548	12,830	10,084
Md.	33,351	27,752	34,342	39,431	43,888	46,464	45,704	47,542	44,304	37,625	41,183
Mass.	8,246	10,690	11,400	11,681	12,218	12,831	13,825	11,628	13,084	11,763	10,801
Mich.	35,696	27,628	22,290	17,961	15,276	12,827	12,430	11,717	9,996	7,908	7,131
Minn.	27,764	27,720	25,944	16,634	12,098	6,508	4,201	2,724	1,177	1,073	1,215
Miss.	33,131	32,629	29,676	22,755	19,079	16,535	13,315	11,132	11,306	10,464	10,481
Mo.	35,751	23,819	15,202	13,632	7,372	4,859	2,985	3,612	380	367	363
Mont.	32	214	155	123	176	51	27	27	24	—	—
Nevada	—	—	—	—	50	—	—	—	—	122	517
Neb.	1,204	949	710	261	509	26	—	—	—	—	—
N. H.	—	52	9	54	40	81	24	72	—	—	—
N. J.	24,843	17,259	26,108	31,142	32,959	32,603	32,564	28,914	29,938	25,774	23,732
N. M.	71	76	215	374	250	—	8	2	1	—	3
N. Y.	27,872	25,593	18,329	16,997	17,883	15,858	15,259	13,982	12,167	10,706	8,726
N. C.	76,887	70,469	64,038	67,045	66,385	64,102	55,441	47,672	48,583	44,770	41,281
N. D.	2,041	1,544	1,280	1,173	587	454	410	180	174	121	65
Ohio	155,622	121,977	104,857	90,688	88,533	74,819	63,574	59,987	54,162	42,486	45,273
Okla.	3,812	2,784	1,611	836	863	—	—	—	—	—	31
Ore.	2,951	3,206	3,459	3,104	3,060	2,246	1,802	1,160	880	669	1,097
Pa.	28,730	24,998	18,877	18,146	20,203	19,029	16,544	16,183	15,377	13,860	13,233
R. I.	609	389	282	86	—	24	24	142	104	177	62
S. C.	50,849	45,190	45,423	47,660	50,372	51,834	43,715	42,478	41,374	38,703	40,347
Tenn.	62,616	53,541	37,449	30,986	33,283	27,509	23,538	21,801	20,572	19,214	14,095
Texas	30,786	21,361	15,193	9,655	9,873	8,149	5,886	4,336	4,003	4,937	3,938
Utah	233	396	316	115	288	230	45	20	93	143	125
Vt.	475	632	461	580	322	569	284	455	241	407	184
Va.	67,829	47,910	58,674	59,271	65,290	60,309	58,998	56,813	53,342	53,999	50,003
Wash.	4,471	3,623	3,539	3,699	4,770	3,468	3,132	2,475	2,762	2,078	1,587
W. Va.	885	767	592	347	316	398	167	96	158	233	141
Wis.	40,387	37,797	34,645	25,707	22,146	15,518	9,943	6,420	3,409	2,637	2,494
Total	1,419,602	1,208,214	1,077,912	954,943	959,141	872,098	763,590	695,080	652,260	574,304	538,923

N.B. The total in 1942 Table 7 will not agree with data in Table 5 since deliveries by smaller companies could not be included in Table 7. Small differences in totals for other years are due to rounding out decimals.



Sackett Builds The Equipment You Need

★ ONE MAN BATCH WEIGH SYSTEMS
★ PLANT MODERNIZATION PROGRAMS
★ CONTINUOUS AMMONIATION UNITS
★ MIXING AND SHIPPING EQUIPMENT

Aerating Equipment
Automatic Control Equipment
Basing Units
Belt Conveyors
Bucket Elevators
Centralized Control Systems
Continuous Acidulating Processes
Continuous Ammoniating Systems
Conveyors
Coolers
Crushers
Disintegrators
Dry-Mixing Units
Dust-Arresting Equipment
Fume Scrubbing Systems
Hoppers and Spouts
Materials Handling Equipment
Milling and Screening Units
Multiple Hopper Batching Systems
Oil Fired Dryers
Plant Mechanization Systems
Pneumatically-Operated Gravity Batch Mixers
Pneumatically-Controlled Valves
Pulverizers
Sackett Timken Bearings
Sacking Units
Scales
Screens
Shipping Units
Shuttle Belt Conveying Systems
Tailing Mills
Vacuum Condensing Systems

GET THE RIGHT ANSWER TO YOUR PRODUCTION PROBLEMS *get Sackett*

SACKETT ENGINEERED

THE A. J. SACKETT & SONS CO.
1707 S. HIGHLAND AVENUE
BALTIMORE 24, MARYLAND

Wilson and Geo. Meyer Group To Distribute Phosphatic Fertilizers

Formation of Wilson & Geo. Meyer & Co. Intermountain, with head offices in Salt Lake City, Utah, was announced in mid-June in San Francisco.

The new company will act as distributor for the phosphatic fertilizer products of the $5,000,000 plant of Western Phosphates, Inc. now under construction at Garfield, Utah.

John Foster of Portland, Ore. has been named manager of the new firm's Salt Lake City offices. For the past several years he has been in charge of the Portland office of the parent firm of Wilson & Geo. Meyer & Co., 102-year-old coast-wide distributors of many of the worl'ds leading agricultural and industrial chemicals.

Wilson Meyer will head both firms. Other officers include L. N. West, executive vice president; Ralph S. Waltz, vice president and sales manager; Thomas Harris, vice president; Jeffery W. Meyer, secretary and Theodore I. Stone, treasurer.

The Western Phosphates, Inc. Garfield plant is scheduled for completion early in 1954 with an initial output of more than 60,000 tons annually of treble superphosphate, ammonium phosphate and liquid phosphoric acid, all in heavy demand in the agricultural West.

The plant is jointly owned by American Smelting and Refining Co., Kennecott Copper Co. and Stauffer Chemical Co. The Meyer firm has for many years distributed Stauffer's superphosphate production from plants at Richmond and Los Angeles, Cal. and at Tacoma, Wash. It also distributes other agricultural and industrial chemicals from offices and warehouses in San Francisco, Los Angeles, Fresno, Portland and Seattle.

Nitrogen Division Starts On Ammonia Plant

Nitrogen Division, Allied Chemical & Dye Corp., has started full-scale construction work on its ammonia plant at La Platte, near Omaha, Nebr. Production is scheduled for spring, 1954.

Although the site was acquired some time ago and preliminary field work completed, active construction had been deferred pending assurance of gas supply.

The Federal Power Commission recently authorized Northern Natural Gas Co. of Omaha to supply gas to the plant on an interruptible basis.

Although most efficient operation of the plant requires gas to be supplied on a firm basis, Nitrogen Division has decided to proceed with full scale contruction in order to provide the nitrogen for agriculture as soon as possible.

Canadian Manufacturers Form Trade Association

Fourteen Canadian farm chemicals firms have organized the Canadian Agricultural Chemicals Association to foster "in a manner consistent with the public interest" progress and development of industries in Canada which produce and distribute the chemicals.

Officers of the new organization include the following:

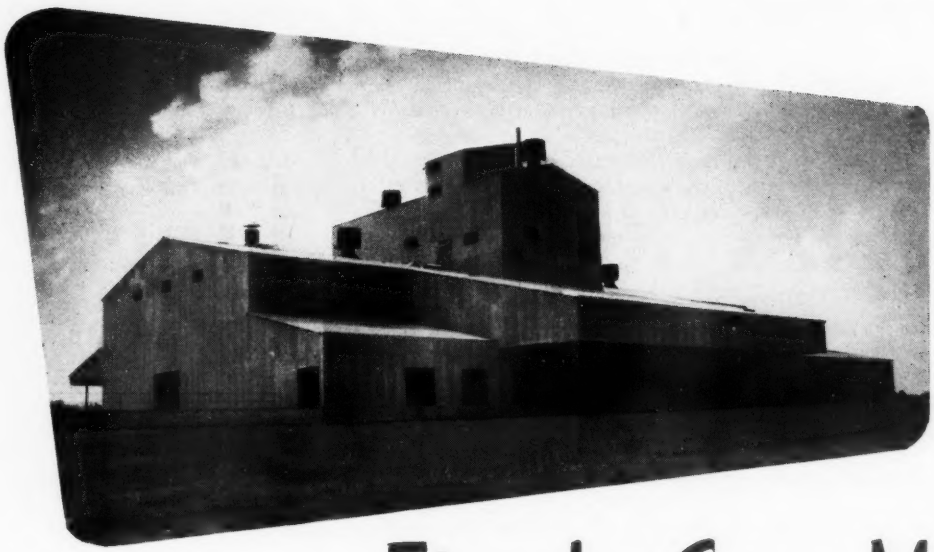
J. H. D. Ross, agricultural chemicals department of Canadian Industries Ltd., Montreal, president; A. H. Carter, Green Cross division of Sherwin-Williams Co. of Canada Ltd., Montreal, first vice president; W. R. Geddes, North American Cyanamid Ltd., Toronto, second vice president; M. F. Anderson, Naugatuck Chemicals division of Dominion Rubber Co., Ltd., Montreal, secretary and K. B. Owens, Monsanto (Canada) Ltd., Montreal, treasurer.

Encouragement of research aimed at improvement of production, distribution and consumption of farm chemicals will be one important function of the organization, Ross stated.

Beeson Promoted

William B. Beeson Jr. has been named sales manager of Diamond Alkali Co.'s new subsidiary, Belle Alkali Co., of Belle, W. Va.

Beeson is a veteran member of the company's sales organization.



Florida Goes Modern

To better serve its ever growing family of farmer-customers with plant foods of premium quality, the NACO FERTILIZER COMPANY selected the Sackett organization to design, construct and equip this new highly-mechanized fertilizer mixing plant at Fort Pierce, Florida.

This new facility is, to our knowledge, the first plant of its kind ever to be *custom-engineered* throughout to meet the complex manufacturing problems due to Florida's required multiplicity of grades.

Superphosphate and mixed goods producers are invited to get our seasoned counsel on their expansion and modernization programs. It is available at no cost.

SACKETT
BALTIMORE

America's Foremost Designers and Builders..

SUPERPHOSPHATE PLANTS • FERTILIZER MIXING PLANTS

RELATED PRODUCTION EQUIPMENT

THE A. J. SACKETT & SONS CO.,
1707 S. HIGHLAND AVENUE, BALTIMORE 24, MD.

Architects and Manufacturing Engineers to the Fertilizer Industry since 1897

At mid-year meeting . . .

CSMA Reports Liquid Insecticide Statistics

FACTS and figures on the packaging of liquid insecticides during 1952 were reported at the mid-year meeting of the Chemical Specialities Manufacturers Association, Inc. May 18 and 19 at the Drake Hotel, Chicago.

Figures showed that more than 13 million gallons of liquid insecticides, with a retail value of approximately $33,000,000 were packed during the year.

Delegates attending the 39th annual mid-year meeting of CSMA also heard a report on a promising new basic insecticide material called Strobane, a chlorinated product of a mixture of terpene hydrocarbons that is available for test purposes.

Adopt Standards

In other action, the association adopted official industry standards for analysis of allethrin. The standard provides for the first time an official analysis method for manufacturers in the insecticide industry and was approved by the association on the recommendation of its chemical analysis committee.

Most important news to the industry representatives attending the meetings were the figures on liquid insecticides.

A growth of 15 per cent over 1951 was shown in the figures for last year, which were based on an industry survey conducted for CSMA by Ernst & Ernst, New York City accountants.

Household sprays accounted for more than two-thirds of the 1952 production, according to the figures.

Although overall totals for the year showed gains, losses were noted in powdered insecticides, including wettable types and crystalline forms of mothicides, which dropped from one and a half to 14 per cent.

Principal losses in the solid products were in livestock wettable powders, in which 1952 production was estimated at 725,000 pounds. Other powdered insecticides accounted for 1.7 million pounds of the 1952 production but this department also showed a 14 per cent drop.

Mothicides Good

Mothicides made the best showing, with 1952 production of 17.3 million pounds only one and a half per cent under 1951.

Reporting the figures at the session was Dr. George W. Fiero, of Esso Standard Oil Co., who cautioned delegates that the survey results were based on questionnaires returned by only 38 per cent of the 200 manufacturers queried. He said figures presented at the meeting were a projection of these returns.

Continued preference for residual sprays was indicated by figures for household sprays. These accounted for 60 per cent of the 1952 production, with the remainder going into space sprays.

Chlordane gained favor with users while DDT type insecticides fell slightly, the figures further showed. Approximately 41 per cent of the residual sprays contained chlordane last year as compared with 36 per cent the year before.

DDT dropped from 25 per cent of the household spray production in 1951 to 19 per cent in 1952. Complete results of the survey, with figures for 1951 included, are presented on the next page.

Strobane, the new insecticide material described at the meeting, may be one of the most promising to be introduced in over a decade, according to D. L. Kent, head of biochemicals development for B. F. Goodrich Chemical Co.

Highly Effective

Kent said screening tests conducted by Goodrich and independent laboratories show the new product to be highly effective against many species of household insects and a broad range of farm pests.

He said Strobane can be prepared and used in practically all conventional forms with the most immediate potential usefulness in the field of aerosols, space sprays and surface sprays.

Kent added that no aromatic solvent is required to hold Strobane in solution for aerosols or space sprays as is quite common with other chlorinated hydrocarbons. The material leaves no objectionable residue.

Toxicological tests were carried out by Dr. Herman A. Shellanski, director of Industrial Toxicology Laboratories, Philadelphia, which showed no limiting characteristics

in several forms of application. Kent stressed the fact that as yet no request has been filed with the USDA for a permit to sell quantities of Strobane. The company is encouraging qualified research workers in various fields of agriculture and industry to test the material.

Experimental Samples

Only experimental samples of the insecticide are available at present.

The new standards adopted by CSMA are the result of several years' study by the chemical analysis committee, headed by Dr. Mark Hill, Gulf Oil Co. research specialist.

Designated as the ethylenediamine method for allethrin assay, the standard procedure includes determination of allethrin, chrysanthemum monocarboxylic acid, chrysanthemum monocarboxylic anhydride and chrysanthemum monocarboxylic acid chloride.

Ethylenediamine is used as a control solution to determine presence of various chemical compounds in the materials being tested.

Other talks given in the insecticide division of CSMA included "Application of Radioactive Tracers to Insecticide Research," Dr. Paul A. Dahm, Kansas State College; "Fogging Test Method for Evaluation of Insecticides against Roaches," H. R. Rich and R. L. Brett, West Disinfecting Co.; "The Place of Insecticides in Farm Sanitation," Dr. R. J. Dicke, University of Wisconsin and a symposium on toxicity of ingredients of household insecticides.

Chairman of the insecticide division is James A. Green, Standard Oil Co., of Indiana. ◆

TABLE 1.—Household and Industrial Insecticide Survey 1952 and 1951

Light Face Type - 1951
Bold Face Type - 1952

	Sales at Manufacturers Level—1952				
	Number of Units				Gallons
	Less Than Pint	Pint	Quart	Gallon	Five Gallons and Over
SPACE SPRAYS—with knock down agents;	19,936	6,970,646	2,830,548	315,387	287,204
not more than 2% DDT	**25,488**	**7,452,490**	**2,931,932**	**357,440**	**404,475**
RESIDUAL SPRAYS					
With 2½% to 6% DDT with or without other	336,423	4,551,968	1,930,892	109,624	345,739
materials except chlordane	**499,126**	**3,544,372**	**1,506,900**	**98,257**	**154,006**
With chlordane, with or without other	89,625	7,328,136	2,721,340	141,570	28,285
materials	**326,707**	**9,155,221**	**3,072,435**	**102,987**	**608,711**
	19,608	39,173	28,806	14,958	5,185
FABRIC PEST SPRAYS	17,112	1,423,061	534,098	28,681	27,064
	9,010	10,896	99,388	806,198	506,238
LIVESTOCK SPRAYS—oil base	35,292	14,190	363,708	667,602	571,210
	114,620	86,652	277,080	52,811	39,565
LIVESTOCK EMULSION CONCENTRATES	106,179	112,103	276,246	50,078	25,343
OTHER FMULSION CONCENTRATES	503,208	211,560	69,208	21,167	212,295
(non agricultural)	**533,900**	**226,824**	**99,212**	**29,259**	**108,282**
CONCENTRATES—to be diluted	.....	.....	.....	3,382	24,995
(non agricultural)	.....	.....	.....	**3,994**	**15,665**
	.....	.....	5,000	26,436	35,604
STORED GRAIN SPRAYS	.....	.....	**5,000**	**21,769**	**55,970**
	1,092,430	19,199,031	7,962,262	1,491,533	1,485,110
TOTALS	1,543,804	21,928,261	8,789,531	1,360,067	1,970,726

TABLE 2.—Household and Industrial Insecticide Survey—1952 and 1951

Light Face Type - 1951
Bold Face Type - 1952

	Number of Pounds							
	Less than 4 oz.	4-8 oz.	8-16 oz.	1-5 lb.	5-10 lb.	10-25 lb.	25 lbs.	Over 25 lbs.
LIVESTOCK wettable powders—			23,617	527,567	29,375	7,136	.	252,980
to be suspended in water			24,170	475,265	28,303	22,210		174,480
POWDERS—for application	56,557	30,469	525,677	513,336	637,967	1,024	256,725	52,590
without water	66,055	37,400	655,427	549,515	340,917	1,175	24,075	54,195
MOTHICIDE—crystals, balls,		1,669,544	1,078,908	10,146,603	780	900	1,825	4,775,802
flakes, etc.		1,820,182	1,118,021	10,933,526	855	520	2,225	3,471,738
	56,557	1,700,013	1,628,202	11,187,506	668,122	9,060	258,550	5,081,372
TOTALS	66,055	1,857,582	1,797,618	11,958,306	370,075	23,905	26,300	3,700,413

FERTILIZER MATERIALS MARKET

New York

June 12, 1953

Sulfate of Ammonia

While new prices have not been announced for shipment after July 1, very little change is expected because of some carry-over in unshipped material at some plants. Demand is rather dull at the moment.

Ammonium Nitrate

Two producers announced price advances of $5 to $6 per ton respectively for the new season starting July 1. Because the demand still exceeds the supply, it is felt the material easily can be sold at the advanced prices.

Urea

It is reported that one large domestic producer of urea will advance the price $10 per ton, effective July 1. For this reason offerings of imported urea have been firmer in price recently.

Organics

Prices of organic fertilizer materials were mostly weak with little buying either for prompt or future shipments as buyers awaited developments. Tankage and blood were quoted at $4.50 to $5 per unit of ammonia ($5.47 to $6.08 per unit N), f.o.b. Eastern points. Soybean meal was quoted at $65 per ton in bulk, f.o.b. Decatur, Ill., with little interest shown. Cottonseed meal and linseed meal also were easy in price. Both feed and fertilizer buyers were buying only for their immediate requirements.

Nitrogenous Tankage

Some producers of this material have reduced their prices as much as $1 per unit of ammonia for nearby shipment and the market is quoted at about $4 to $4.75 per unit of ammonia ($4.86 to $5.77 per unit N), according to shipping point.

Castor Pomace

The price of this material is nominal at the present time because of lack of buying and has shown a declining tendency. Producers, however, are not forced to press the sale of this material because of limited stocks on hand.

Fish Meal

The menhaden fishing season has started and sales of fish scrap are being made at approximately $125 per ton, f.o.b. fish factories for nearby shipment, with the meal being quoted at about $5 per ton higher, both in bulk, with bags extra. Imported fish meal is available in limited quantities at various ports.

Bone Meal

This material has recently showed a downward tendency in price with the end of the current fertilizer season and little activity is expected until the fall, with prices only nominal.

Hoof Meal

No change in recent prices of $6.25 per unit of ammonia ($7.59 per unit N), for this material, f.o.b. Midwest shipping points.

Superphosphate

While there are rumors of a slight price advance in this material effective July 1, up 5 cents per unit, nothing definite has been announced at this time. Prices for triple have not been set for the new season.

Potash

Producers are still writing contracts for domestic material for shipment over the coming year on the same basis as last year's price which was 43 cents per unit, f.o.b. Carlsbad, N. M. in bulk, less usual discounts. Some foreign potash was being offered at competitive prices.

Philadelphia

June 12, 1953

Business in raw materials is extremely quiet. While blood, tankage and bone prices nominally are unchanged, there is little movement. Prices scheduled for advance about July 1 cover nitrate of ammonia, sulfate of ammonia to a very limited degree, nitrogen solutions, anhydrous ammonia and urea. And it is reported that an increase of 5 cents per unit APA is contemplated for superphosphate. Nitrate of soda and potash prices have not changed, but cyanamid, castor pomace and nitrogenous tankage are being reduced. Sales of mixed goods are reported considerably ahead of last year at this time.

Sulfate of Ammonia.—Market is rather quiet and supply seems ample to take care of requirements. Prices in general have not been advanced, with the exception of possibly two producers in the West. One plant in the East reports a reduction of one dollar per ton.

Nitrate of Ammonia.—The domestic price is scheduled for an advance July 1 of $6 per ton, to $70, while Canadian advances $5 per ton, to $77.50 at producing plant. Production still is behind the demand.

Nitrate of Soda.—No price changes are reported. Movement has been retarded by bad weather, but gradually is improving.

Blood, Tankage, Bone.—Trading in these packing-house products is very slow and prices nominally are unchanged at about $4.75 to $5 per unit ammonia ($5.77 to $6.08 per unit N) in the East, and $5.25 to $5.50 ($6.38 to $6.68 per unit N) in the Chicago area. They still ask $65 per ton for steamed bone meal, but no buying interest.

Castor Pomace.—Price reduced to $35 at producing factory but practically no demand.

Fish Scrap.—Fishing has started but market is inactive, with about $135 per ton indicated as price for menhaden meal. Only nominal, though.

Phosphate Rock.—Shipments are reported moving actively against contracts and demand fairly strong. Supply shows tendency toward tightness.

Superphosphate.—Supply some-

Kill Cotton-Killing Insects with

DIAMOND BHC·DDT

DIAMOND'S Organic Chemicals Division—one of the world's largest manufacturers of basic insecticides—at your service when you need it and where you need it—right in the cotton-growing South. Rapid shipments to any point on a moment's notice of a serious infestation.

DIAMOND AGRICULTURAL CHEMICALS

DIAMOND

ALKALI

CHEMICALS

DIAMOND ALKALI COMPANY

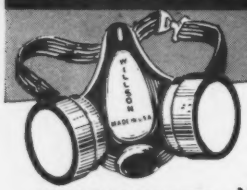
Organic Chemicals Division

80 Lister Avenue • Newark 5, New Jersey

Plants: Houston, Texas and Newark, New Jersey

Chemicals you live by

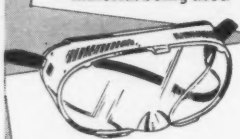
LUNG and EYE
protection
FOR AGRICULTURAL
CHEMICAL WORKERS



RESPIRATORS
AGRISOL®
Parathion, Aldrin, Toxaphene, etc.
Agri-Tepp*
tepp, hetp
U.S.D.A. tested
Comfortable, efficient protection for light concentrations of insecticides.

No. 25 DUST RESPIRATOR—a filter respirator for protection against *non-toxic* dusts

Gas Masks
Lightweight, easy-to-wear full-face protection for heavy concentrations of insecticides. Types for all hazards. State material being used



MonoGoggle®
Lightweight, all plastic eye protection for handling chemicals and for impact hazards

Don't take chances—keep on the safe side—use agricultural protective equipment by Willson. Write for literature and colorful agricultural safety poster.
*TRADE-MARK

WILLSON®
WILLSON PRODUCTS, INC.
Established 1870
248 Washington St., Reading, Pa.

FERTILIZER MATERIALS MARKET

what easier with demand regarded as quite satisfactory for this season. Advance of 5 cents per unit APA is expected.

Potash.—Shipments against contracts continue in full volume, and though production capacity has been increased, almost the entire output is said to have been sold ahead.

Charleston

June 11, 1953

Market on organics temporarily is rather quiet. Production of mixed fertilizers in the Southeast is practically over. Manufacturers are contracting for raw materials for the new season. Cost of superphosphate and some forms of nitrogen will be advanced.

Organics.—A good quantity of blue lupine meal offered by Commodity Credit Corporation already has been sold for May through December shipment and, effective June 3, the Commodity Credit Corporation has extended the price through March 31, 1954 at $21 per ton in bags, f.o.b. Georgia and South Carolina origin points. Domestic nitrogenous tankage varies in price depending on whether summer, fall or spring shipment, $3.75 per unit of ammonia to $4.65 ($4.56 to $5.65 per unit N) f.o.b. production point. Imported nitrogenous is indicated at around $5.35 to $5.50 per unit of ammonia ($6.50 to $6.68 per unit N), in bags, c.i.f. Atlantic ports.

Castor Pomace.—Current offerings now are at $30 per ton in burlap or paper bags, seller's option, f.o.b. Northeastern production points.

Blood.—Unground dried blood at Chicago is indicated at $4.75 to $5 ($5.77 to $6.08 per unit N), f.o.b. Chicago area and $5 ($6.08 per unit N), bulk in the New York area.

Potash.—Domestic potash contracts are being made for the new season at 43 cents for muriate of potash, in bulk, f.o.b. Carlsbad, 60 per cent grade, and 53 cents f.o.b. Trona, California. Two importers have announced prices of 57 cents per unit K_2O for 60 per cent bulk muriate, ex-vessel, Atlantic ports and one of these offers sulfate of potash at 90 cents per unit ex-vessel.

Ground Cotton Bur Ash.—This source of carbonate of potash, particularly adaptable for use in tobacco fertilizers, is available for prompt and future shipment at prices approximating the delivered cost of domestic sulfate of potash. Analysis currently is 38 per cent to 42 per cent K_2O.

Phosphate Rock.—Market continues firm with prices relatively unchanged. Supply position of high-grade continues tight.

Superphosphate.—Some producers have indicated that for the new season normal superphosphate will sell from three to five cents per unit APA higher at southeast origin points. Triple superphosphate continues far short of demand.

Sulfate of Ammonia.—A major domestic producer of coke-oven material prices, for the new season, at $44 bulk f.o.b. Johnstown, Pa., $45 f.o.b. Lackawanna, New York, $47 Sparrows Point, Md. The Lackawanna price is up $1 from the previous season.

Nitrate of Soda.—Demand is seasonal and stocks are adequate with prices unchanged.

Nitrogen Solutions.—Another major producer of nitrogen solutions has raised his price, effective July 1, to $125.37 f.o.b. Military, Kansas, per ton of N.

Calcium Ammonium Nitrate.—This article continues available at major Atlantic and Gulf ports at $51.25 in bags, f.o.b. cars at ports.

Ammonium Nitrate.—It has been announced that, effective July 1, Canadian 33 per cent grade will be priced at $77.50 per ton f.o.b. Port Robinson and a domestic producer announces $70 per ton f.o.b. Military, Kansas, in bags.

Industrial News

New Products **New Plants** **New Appointments**

Bishopp Leaves USDA To Take Cotton Post

Dr F. C. Bishopp left his position with the USDA June 30 after 49 years to take a position with the Oscar Johnston Cotton Foundation as coordinator of all federal, state and industry-sponsored research concerned with control of the pink bollworm.

He has headquarters at Brownsville, Tex.

Dr. Bishopp, who was assistant chief at the Bureau of Entomology and Plant Quarantine will evaluate and recommend procedures of research to the organizations concerned with control of the bollworm. He is a world authority on medical and veterinary entomology and is widely known for his research work with cotton insects.

Since 1941 he had been assistant bureau chief in charge of research.

Knipling Fills Bishopp's USDA Research Position

Dr. Edward F. Knipling, of the USDA, has been named assistant chief in charge of entomological research of the department's Bureau of Entomology and Plant Quarantine. His appointment was effective July 1. Dr. Knipling replaces Dr. F. C. Bishopp who left the Bureau June 30.

Dr. Knipling joined the Bureau in 1930. Since 1946 he has been leader in the Bureau's Division of Insects Affecting Man and Animals.

Allethrin in Production

Allethrin is in full-scale production at the U. S. Industrial Chemicals Co. plant in Baltimore. U. S. I. is a division of National Distillers Products Corp.

W. P. Marsh Jr., president of the company, stated that U. S. I.'s new Baltimore plant, first integrated allethrin plant in the world, already has reached rated capacity. The plant began operations last fall after the commercial adaptation of the allethrin principle discovered in 1949 by scientists of the U. S. Dept. of Agriculture.

At Purdue Fertilizer Short Course

Analyzing a fertilizer sample for its mineral content as part of a short course in photometry held at Purdue U. are (front) C. R. Philips, Darling & Co.; L. D. McKillop, Va. Dept. of Agriculture; (back) C. Mattivi, Spencer Chemical Co. and E. S. Packard, Me. Exp. Station.

Nixon Succeeds Higgins As Chairman of Hercules

Anson B. Nixon last month succeeded Charles A. Higgins as chairman of the board of Hercules Powder Co., a post Higgins had held since 1944.

Higgins also resigned as a member of the company's finance committee, but remained on the board of directors.

Nixon, a vice president of the chemical company since 1940, resigned as a company vice president to accept his new post.

Albert E. Forster, president of Hercules, was elected a member of the company's finance committee, to fill the vacancy left by Higgins' resignation.

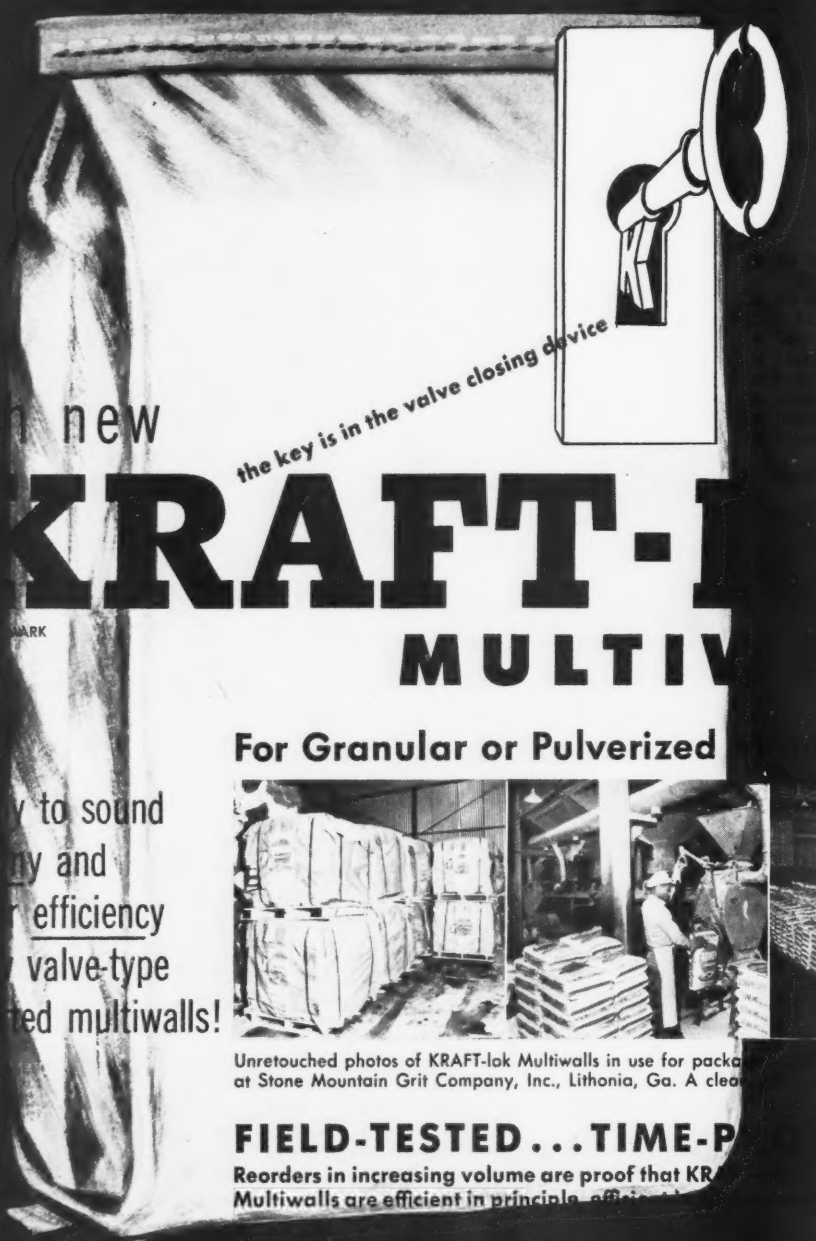
Forster was elected president of the company at a board meeting April 29, when Higgins resigned the post he had held since 1939 in keeping with Hercules' retirement policy.

Armyworm Damage Widespread in Midwest

Long a plague feared by farmers across the nation, armyworms are causing widespread losses in Illinois, Indiana and Ohio following outbreaks in the southern states. Some entomologists have reported that the current outbreak is the worst in more than 50 years.

The destructive pests have been appearing in more and more areas as the season advances. Farmers have been advised to examine their fields daily for their presence.

FILL BETTER, CLEANER!
CLOSE TIGHTER, FASTER!
SPEED UP PRODUCTION...SAVE DOLLARS!



Unretouched photos of KRAFT-lok Multiwalls in use for packa
at Stone Mountain Grit Company, Inc., Lithonia, Ga. A cleo

FIELD-TESTED...TIME-P
Reorders in increasing volume are proof that KR
Multiwalls are efficient in principle, effici

KRAFT BAG CORPORATION

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Gummed Tape Dept.
• The Gilbarco Corp.
• Kraft Bag Corp.

3 Generations of Bag Specialization

Industrial News

New Nitrogen Plant

Synthetic ammonia and fertilizer nitrogen compounds will be produced in a plant to be built at Tuscola, Ill., by National Distillers Products Corp.

Production capacity of the plant will be 50,000 tons a year of anhydrous ammonia. The project will include facilities for conversion of part of the ammonia into nitric acid which will be transformed into ammonium nitrate by reaction with more ammonia.

In turn, the ammonium nitrate will be used in the manufacture of nitrogen solutions.

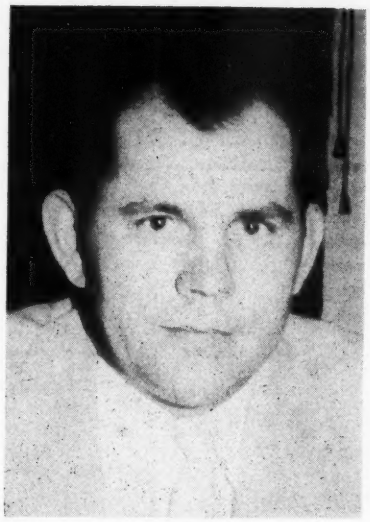
Classified Ads

SALES REPRESENTATIVE NITROGEN FERTILIZERS: Require man with education in Agricultural Field and experience in sales to manufacturers of mixed fertilizers. Territory will include the South East and some of the Gulf States. Please send resume covering education, business experience, age, references, photograph and present salary. Address "400," care FARM CHEMICALS, Philadelphia 7.

STEEL TANKS FOR SALE: —Dished heads—all welded. Excellent for storing liquid fertilizer, chemicals, etc. At Marion, Ind.—(8) 12,700 gal., (2) 11,000 gal., (2) 10,500 gal. At Norfolk, Va.—(9) 15,200 gal., (3) 5,800 gal. At Tonawanda, N. Y.—(5) 7,000 gal. At Mt. Carmel, Pa.—(9) 4,600 gal., (5) 4,300 gal., (2) 3,800 gal. Perry Equipment Corp., 1430 N. 6th Street, Phila. 22, Pa.

Prominent fertilizer executive available immediately. Thirty years' experience in all phases of raw material and mixed fertilizer business. Qualified to operate business anywhere. Address "395," care FARM CHEMICALS, Philadelphia 7.

Promoted



S. E. Shelby

S. E. Shelby, of Federal Chemical Co. has been named general production manager of all the company's plants.

Shelby joined Federal in 1948 and headed the engineering department. He is an engineering graduate of Vanderbilt University and is a graduate lawyer. He served in World War II as a captain in the Quartermaster Corps and spent 32 months in the Pacific Theater.

For the present, Shelby will keep his office in Nashville, Tenn.

Columbia-Southern Makes Personnel, Site Changes

Columbia-Southern Chemical Corp., subsidiary of Pittsburgh Plate Glass Co., last month announced several changes in executive personnel and a change of location in the corporation's technical service department from Barberton, O. to Pittsburgh.

E. W. Haley, director of sales, Pittsburgh, has been named assistant to the vice president with headquarters in New York City. Haley will direct Columbia-Southern's export sales program and in addition will handle special assignments from the vice president.

C. F. Bingham, assistant director of sales, has been named director of sales, with headquarters in Pittsburgh.

C. J. Stroemple, acting manager of calcium hypochlorite sales, has been named assistant to manager, market research and development department. His efforts will be devoted chiefly to product development activities. He, too, will be located in Pittsburgh.

Foster G. Garrison, technical representative, market research and development department, has been named assistant to manager of the department. He will concentrate his activities on market research.

CSMA To Meet

The Chemical Specialties Manufacturers Association, Inc. will hold its 40th Annual Meeting in Washington, D. C. Dec. 6–8 at the Mayflower Hotel.

The original association from which the CSMA developed was organized in Washington in 1914. There now are 300 members.

Some of the founders of the association are expected to be present and will be accorded fitting recognition.

7-1 Maracarb N For Pesticide Process

It is well known that some farm chemicals, particularly chlorinated hydrocarbons, are susceptible to decomposition either during or after formulation. Often this decomposition is attributable to the so-called catalystic activity of the carrier or diluent used in the formulation.

Extensive laboratory tests have shown Maracarb N to be very effective in nullifying catalystic activity, thereby prolonging shelf-life of the toxicants.

The new humectant was developed by Marathon Corp's. chemical division.

Maracarb N is a liquid product, having a concentration of approximately 50 per cent solids. Laboratory and pilot plant quantities are available for immediate trial. To get further technical information, fill out a **Reader Service card,** using **Code Number 7-1.**

POTASH

Call or wire

ALEXANDER M. McIVER & SON

P. O. BOX 155 Charleston, S. C.

Phones: L. D. 921 and 922

TC
TENNESSEE CORPORATION

TRIPLE SUPERPHOSPHATE

46 to 48% Available Phosphoric Acid

A MARK OF FLORIDA TRIPLE PHOSPHATE RELIABILITY

20% SUPERPHOSPHATE

Sales Agents: Bradley & Baker
155 East 44th St. New York, N. Y.

•

U. S. Phosphoric Products

Division

TENNESSEE CORPORATION

Tampa, Florida

FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

•

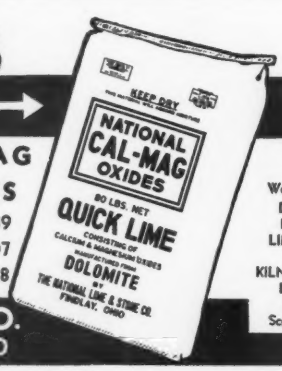
SAMUEL D. KEIM

1343 ARCH STREET

PHILADELPHIA 7, PA.

CAL-MAG OXIDES

CUT YOUR COSTS WITH →



Unexcelled for its superior Dehydrating, Neutralizing, and Curing factors in the preparation of better fertilizers. Write for complete information.

PROMPT SHIPMENTS

Three railroads serve our Carey, Ohio plant--assuring prompt delivery--everywhere.

CAL-MAG OXIDES

MgO	40.39
CaO	58.07
TNP	203.88

We Also Produce
DOLOMITIC HYDRATED LIME (165 TNP)
and
KILN DRIED RAW DOLOMITE (107 TNP)
Screened to size

The NATIONAL LIME and STONE CO.
General Offices • • • • • FINDLAY, OHIO

Industrial News

Ward Returns To Job With Fulton Bag Co.

Charles P. Ward Jr. has been released from active duty as a captain with the U. S. Air Force and has returned to the Fulton Bag & Cotton Mills.

A native of New Orleans, Ward joined Fulton in 1937 after attending Loyola University at New Orleans. He worked in various capacities in the sales department at Fulton's New Orleans office before enlisting in the Army Air Corps in 1941.

Ward served for four years as a navigator-bombardier, completing 23 missions over Germany with the U. S. Eighth Air Force. He was awarded the Air Medal with Oak Leaf Cluster as well as five battle stars.

Dieldrin Gives Control Of Armyworms in Midwest

Dieldrin as a powerful new weapon in the battle against armyworms destroying corn and grain corps in the Midwest has raised hopes that the current rampage of the insect hordes can be stopped dead, according to Shell Chemical Corp.

New hope for farmers in the path of destruction follows granting of official label acceptance by the U. S. Dept. of Agriculture for the insecticide against armyworms.

Areas hit by armyworms are receiving rush shipments of the material.

Stable Fly Control

Stable flies that torment farm animals and keep them from feeding can be controlled by destroying their breeding places and by using effective insecticides such as chlordane, DDT, lindane and methoxychlor against them, the USDA reports. In a recent leaflet, the entomologists say that use of these materials and methods not only will stop the annoyance by these pests, but will help prevent drops in meat and milk production among the livestock during the fly season.

Transvaal Ore Co. Buys Vermiculite Ltd.

Transvaal Ore Co., Ltd. of Johannesburg, South Africa, has taken over all the stock in Vermiculite (Pty.) Ltd. and has purchased the mines, claims and physical assets of Palabora Phosphate and Vermiculite Co., Ltd., both acquisitions effective June 30.

This combines all the vermiculite activities at Loole Kop, Palabora District, Northern Transvaal, into one centralized operation.

New DuPont Spray

Aphids and mites can be controlled quickly and safely with a new spray DuPont is offering for the first time this summer. This spray is based on malathion, a new pesticide material.

Yes, growers from Maine to California standardize on Triangle Brand Copper Sulphate for blight control because it gives *better yields at less cost.* Let us send you our Agricultural Technical Service Bulletins that prove the superiority of Copper Sulphate over organic fungicide in impartial field tests.

PHELPS DODGE REFINING CORPORATION

40 WALL STREET, NEW YORK 5, N. Y. • 230 N. MICHIGAN AVE., CHICAGO 1, ILL.

Industrial News

Join Velsicol Entomology Staff

Stephen S. Easter

Loyd L. Stitt

Velsicol has added Loyd L. Stitt and Stephen S. Easter to its entomological staff.

Stitt, formerly with the USDA's Bureau of Entomology and Plant Quarantine, was one of the collaborating entomologists first to determine the importance of lygus bugs in alfalfa seed production. He also worked on corn borer research in Indiana and on vegetable insect control in western Washington.

Easter, previously with the Food & Agricultural Organization of the United Nations, assisted in control activities of international insect infestations. He also was active in operations relative to grain-storage in many UN member nations, making his headquarters in Washington and Rome.

St. Regis Opens New Sales Office in Dallas

A new multiwall bag sales office in Dallas, Tex. has been opened by St. Regis Paper Co. Working from that office is Harry W. Walker II, who has a background of eight years' service in selling St. Regis multiwall bags.

Walker served with the company's promotion department and, from 1948 to 1952, with the multiwall bag division's eastern sales district. He joined the southwestern sales district this year.

From the Dallas office, Walker serves St. Regis multiwall bag customers in northern Texas and in Oklahoma.

Fertilizer Shipments Drop

A drop of 213,000 tons in shipments of fertilizer during May from the same month last year was reported by the National Fertilizer Association.

The figures were given in the Association's compilation of fertilizer tax tag sales and reports of shipments of plant foods.

Total for May 1953 was 656,000 short tons, compared with 869,000 for May 1952.

Sales and reports of shipments for the first quarter of 1953 were 227,000 tons above the same period in 1952 when the total was 4,605,000.

Budd Gets Hercules Post

New director of advertising for Hercules Powder Co. is Montgomery R. Budd.

Budd succeeds Theodore Marvin, who resigned last month to become president of Michigan Chemical Corp. of St. Louis, Mich.

7-2 New Type Chain For Conveyor Units

A new combination chain for bucket elevators and conveyors, with from 450 to 600 per cent more metal on the wearing tread of each link, has been developed by Beaumont Birch Co.

The added metal not only results in more efficient operation but increases the service life of the chain, the company states in descriptive literature.

The chain has block links cast of either malleable iron or Beauco-CR metal, depending on application. Side bars are made of high carbon steel. Connecting pins of forged steel are used on the malleable iron chain and heat-treated steel pins are supplied with the Beauco-CR chain.

When used with Beaumont "Trac-Pull" patented drive wheels, the new chains provide increased efficiency in operation, greater service life and reduced maintenance costs. For additional information, fill out a **Reader Service card,** using **Code Number 7-2.**

7-3 Bulk Packing, Handling System

A new six-page bulletin offered by Richardson Scale Co. pictures and describes the company's new and unique bulk packing and handling system. Chemicals are weighed and packed in giant cardboard boxes at rates up to 20 tons per hour in the system.

The two-color bulletin describes the specially designed Richardson Bulk Packer and the Bulk-Pak Bins—manufactured by Container Corp.—the basic elements of the system. It tells how the system operates, explaining loading, packing strapping and unloading processes in detail.

Each step is photographically illustrated and a schematic drawing lays out the over-all operation. Also described and illustrated are automatic scales used in the system.

To get a copy of the bulletin, fill out a **Reader Service card** using **Code Number 7-3.**

lindane

pure gamma isomer of BHC

Now available from Wyandotte in commercial quantities

- safe and easy to handle
- chemically stable **lindane** • free flowing
- readily formulated into solutions or powders

Lindane is the newest addition to Wyandotte's line of agricultural chemicals:

DDT (technical)
BHC (high gamma, low gamma both available)
KREELON* (alkylarylsulfonate for fertilizers)
PLURONICS* (emulsifier)
Wetting agents
Solvents
Fumigants
Emulsifiers
Weed killers
Soil conditioners

Wyandotte, with conveniently located warehouses and plants, can care for all your needs in making high quality insecticides. If you have supplier problems, or need technical assistance in compounding, call on Wyandotte.

*REG. U.S. PAT. OFF.

Wyandotte Chemicals Corporation, Dept. FCL, Wyandotte, Michigan
Offices in Principal Cities

Wyandotte
REG. U. S. PAT. OFF.
CHEMICALS

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine • Calcium Carbonate • Calcium Chloride • Glycols
Chlorinated Solvents • Synthetic Detergents • Agricultural Insecticides • Soil Conditioners • Other Organic and Inorganic Chemicals

MONARCH SPRAYS

This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.
2501 East Ontario Street, Philadelphia, Pa.

HAYWARD BUCKETS

Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.
THE HAYWARD CO., 202 Fulton St., New York

GASCOYNE & CO., INC.

Established 1887
CHEMISTS and ASSAYERS
Public Weighers and Samplers
27 South Gay Street - BALTIMORE, MD.

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for Florida Hard Rock Phosphate Export Association. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association.

115 E. BAYSTREET, SAVANNAH, GA.

FIGURE YOUR FORMULAS
Quickly and Accurately with
THE ADAMS POCKET FORMULA RULE
Price $1.25 Postpaid
WARE BROS. COMPANY
317 N. Broad St. Philadelphia 7, Pa.

WILEY & COMPANY, Inc.

Analytical and Consulting Chemists
BALTIMORE 2, MD.

BRADLEY SCREEN TYPE *and* PNEUMATIC HERCULES ROLLER MILLS

For Fine or Semi-Fine Grinding of
PHOSPHATE ROCKS and LIMESTONE
AND OTHER NON-METALLIC MINERALS
Capacities 1 to 50 Tons Per Hour
Fineness 20 to 325 Mesh
Catalogs Mailed on Request
BRADLEY PULVERIZER COMPANY
Allentown, Penna.

Dictionary of Fertilizer Materials & Terms

A reference booklet for all who are interested in the manufacture and use of chemical fertilizers. It's "priceless" to agricultural chemists and fertilizer salesmen.

Price **$1.00** postpaid

farm chemicals 317 N. Broad Street Philadelphia 7, Pa.

SOUTHERN STATES PHOSPHATE and FERTILIZER COMPANY

SAVANNAH, GEORGIA
Manufacturers of
SULPHURIC ACID, SUPERPHOSPHATE, COMPLETE FERTILIZERS
and ALL TYPES OF BASE GOODS
EXPORT ORDERS SOLICITED

FERTILIZER MACHINERY and ACIDULATING EQUIPMENT

BATCH MIXERS — PULVERIZERS — CAGE MILLS — SCREENS — SCALES
ELEVATORS, AND ALL OTHER EQUIPMENT FOR COMPLETE PLANTS

ATLANTA UTILITY WORKS EAST POINT, GA.

Bollweevil reported heavy . . .

United States Pest Survey

HEAVY infestations of the bollweevil in North and South Carolina and lowered initial infestations of the pink bollworm highlight reports covering the period ending mid-June.

In addition a potential foe of cotton was intercepted last month by Plant Quarantine inspectors. Larvae, pupae and adults of two weevils were found. Closely related species are cotton pests in East Africa.

Boll Weevil—Infestations may equal those of 1950 in some N. C. areas with high square counts reported in southern and eastern counties.

Square infestation in 52 untreated S. C. fields averaged 38 per cent, up six per cent from 1952, as compared to 15 per cent in treated fields. Through the week ended June 20, 313,000 acres had been treated.

Control measures are being used or are needed in most irrigated fruiting fields of the Tex. lower valley area. Injurious bollworm infestations are reported in some of the same fields.

Populations in Ga. fields average 250 weevils per acre in untreated fields, 159 in treated. A decrease in infestations has been reported in Tenn., Miss. and Ark.

Pink Bollworm—Bloom inspections show lower initial infestations than in 1952 in most upper coastal and south central counties of Tex. Three counties have been added to the list of those in which cotton leafworms have been found so far this season.

Grasshoppers—Of an original 325,000 acres in Tex. known to be infested, only about 100,000 acres have economic populations according to latest reports. Little reduction in potential infestations covering 400,000 acres in N. M. has been found by pre-control surveys and in Cimarron Co., Okla., a 100,000 acre infestation remains a threat.

This survey was extracted from the weekly Cooperative Economic Insect Report issued by the Bureau of Entomology and Plant Quarantine, USDA, and from weekly reports of infestations from individual states. It is presented for the use of the pesticide industry to aid in marketing products when and where they are needed.

Other states, including Mo., S. D., Ill. and Ky., report up to heavy populations in some areas.

Chinch Bug—Most grain fields in central and southern Ill. previously thought to have few bugs may produce light migrations and some have dangerous populations. Damage to corn has been found in Ala., Ga., Ind. and S. C.

European Corn Borer—Borers in greater abundance than in any previous June were found in the Clarkville, Tenn. area and infestations on early corn were reported as high as 48 per cent in Mo.

Larval leaf feeding still occurs in all sections of Iowa and farmers were told that if 75 per cent of the plants show feeding and a few unhatched eggs still remain, treatment should be made.

Codling Moth—Entry of larvae into apples in eastern and western N. Y. orchards indicates that the moth may be a problem in some areas. Injury has been more prevalent than usual in Pa. and activity is reported in Mass., N. J., O. and Ind.

Control on a state-wide basis in Mo. has been only fair through the first brood. A parathion-DDT program is said to be doing well in spite of hot, dry weather although many growers have been told that it is advisable to use full strength parathion in addition to full strength DDT.

Cutworms—Damage from the black cornworm has necessitated replanting of some corn in northern Mo. for the fourth time this season. Ind. reports the pests prevalent in some northern corn fields.

Greenbug—Aerial application of parathion has been used on some heavily infested fields in Minn. Infestations were reported generally from south central and southwest counties.

Rice Leaf Miner—Growers in central Cal. valleys have experienced a rather general epidemic flare-up of a leaf miner species. The pest is present in all rice growing areas of the Sacramento and San Joaquin valleys but the greatest damage has occurred in areas of the former. The leaf miner probably is a native insect and is known in many areas of North America.

Control measures, based on emergency test plots, call for one-half pound actual dieldrin per acre applied after draining of water from the checks. Later plots indicated that heptachlor is equally effective although the kill is a little slower.

Although some fields have been severely injured, in many instances the plants have not been killed and still will produce a satisfactory yield although harvest will be considerably delayed.

Iowa Pest Survey

Harold Gunderson, Iowa extension entomologist, has released the results of a spring pest questionnaire. The following information is based on replies from 33 counties:

Acres clover sprayed: 38,915
Acres attacked by leaf weevil and pea aphid: 143,908
Acres sweet clover sprayed for weevil: 85,433
Acres corn ground treated prior

to planting for wireworms, rootworms, etc.: 85,433

Bushels seed corn treated with lindane for wireworms: 24,155 (Good results reported from 10 of 23 counties)

Acres corn destroyed by wireworms and other seed-attacking insects: 16,425

Acres corn attacked by cutworms: 33,850

Acres corn treated: 7,000

Acres corn replanted: 10,385

Pest Interceptions

Two economic pests were intercepted by Plant Quarantine inspectors during recent weeks. A ship passenger arrived at New York from Italy with mallow roots found to be riddled with larvae, pupae and adults of two weevils not known in this country. Very closely related species are pests of cotton in East Africa.

Cherry fruit flies have been uncovered six times at New York International Airport on cherries arriving in airplane stores. It is reported that the fly readily could adapt itself to conditions in this country once introduced. Last year 21 interceptions of the pest were made at Atlantic coast ports. ◆

Super Shows Gain

Production of superphosphate in the United States during the month of April totaled 972,625 short tons for normal, 88,488 tons for concentrated and 6,171 tons for wet-base goods, according to the Bureau of the Census, Department of Commerce.

Compared with last month's totals, these figures show gains of 10 and one per cent, respectively, for normal and concentrated grades and a decline of three per cent for wet-base goods.

During the 1953 season production was 26 per cent greater for concentrated and 19 per cent less for wet-base goods, while the output of normal superphosphate remained the same as in the 1952 season.

NITROGEN—Today and Tomorrow NO. 2 IN A SERIES

s easy to see the difference in size of the grains of corn pictured above. But the corn at left also has an unseen *extra* advantage. It contains 10.56% protein, while the corn at right, grown in the same field, contains only 8% protein. The answer is nitrogen. The corn at left was fertilized with 100 pounds more actual nitrogen per acre than the corn at right. Thicker planting of high-yielding hybrids has drained nitrogen from many corn belt soils. This has resulted in lower protein corn – a serious problem to stockmen, millers, agronomists, plant breeders and the nation as a whole. By supplying more and more nitrogen to increase both the yields and protein content of corn and other food and feed crops, Nitrogen Division serves America today and tomorrow!

Nitrogen Division
ALLIED CHEMICAL & DYE CORPORATION

New York 6, N. Y. • Richmond 19, Va. • Hopewell, Va. • Columbia 1, S. C.
Atlanta 3, Ga. • South Point, Ohio • San Francisco 3, Calif.

NITROGEN DIVISION ALLIED CHEMICAL

America's Leading Producer and Distributor of Nitrogen

Industrial News

Scientists Use Herbicides To Watch Plant Life

Weed killers normally are used to kill plants but several University of California scientists are using the chemicals charged with radioactive material to determine how healthy plants live.

How sugars manufactured in plant leaves move through the plant is being determined by Alden S. Crafts, professor of botany by using the herbicides.

Radioactive 2, 4-D is absorbed by bean and morning glory plants and moved through the plant as if it were a sugar manufactured in the leaves. By using X-ray film, Crafts can tell exactly where the radioactive chemical goes.

He hopes to find out why some plants are more susceptible to herbicides than others by the tests.

Super Up in March

Increased production of normal and concentrated superphosphate and a drop in production of wet-base goods was reported by the Department of Commerce for March.

Production in the U. S. during the month totaled 887,502 short tons for normal, 87,276 tons for concentrated and 6,056 tons for wet-base goods.

These figures showed increases of 16 and nine per cent for normal and concentrated over February and a decrease of five per cent in wet-base goods.

For the 1953 season, July through March, quantities were 28 per cent greater for concentrated and 17 per cent less for wet-base goods than for the 1952 season. For this period the 1953 production of normal remained approximately the same as for 1952.

Two-Ounce Krilium

Introduction of a two-ounce package of Krilium soil conditioner on a national retail basis was announced last month by Monsanto Chemical Co.

"The new package, which was created for convenient use of Krilium in potting and transplanting, will be especially helpful in bulb-planting this fall," Roy L. Brandenburger, general manager of the merchandising division, said. Two ounces of Krilium will treat enough soil for up to 36 bulbs.

Many Industry Members Attend Materials Show

Many members of the farm chemicals industry attended the first Exposition of Basic Materials for Industry, held in the Grand Palace, New York City, June 15–19.

The show has been called "a new link in our industrial communications system." Exhibits and conference discussions covered wide range from atomic energy and titanium to wood, glass and steel.

Don G. Mitchell, chairman of the board of Sylvania Electric Products, Inc., was chairman of the board of sponsors of the exposition.

Toxaphene for Cutworms

Hercules Powder Co. reports that toxaphene insecticides are being used to fight tremendous infestations of cutworms and armyworms reported from several southern states. Indications point to similar outbreaks soon in more northern areas, the report, issued late in May, stated.

Most species of these destructive pests thrive during a cold, wet spring, the company added.

Potash Production High

Largest tonnage of potash salts ever shipped by American producers during any quarter was delivered during the first quarter of this year, the American Potash Institute reports.

Deliveries totaled 898,913 tons of potash salts containing an equivalent of 522,151 tons of K_2O. The shipment represents an increase of 35 per cent in salts and 37 per cent in K_2O over the corresponding period in 1952.

Complex Fertilizers

The following letter was received from Ir Th. J. J. Hoek, of Staatsmijnen in Limburg, Geleen, Holland. It comments on the article "How the French Make Complex Fertilizers," printed in the February issue, page 31:

Dear Sir:

With particular interest we read your article about the production of complex fertilizers by the St. Gobain process in the February 1953 issue of FARM CHEMICALS.

On page 32 you state:

"The process in which Ca $(NO_3)_2$ is removed by filtration is attractive if lime nitrate easily can be marketed. It allows elimination of sulfuric and phosphoric acids but as yet that process is not operated on a commercial scale."

In our works we have a daily production of about 300 tons of complex fertilizers. Hereto we dissolve phosphate rock in nitric acid only and remove $Ca(NO_3)_2.4\ H_2$ which product is worked up into anhydrous $Ca(NO_3)_2$. So, contrary to what is said in the article mentioned, we may state that the process eliminating phosphoric or (and) sulfuric acid in the preparation of complex fertilizer, is commercially used in Holland.

We may still add that there is another and perhaps better way of marketing this Ca $(NO_3)_2$ by forming the double salt $[Ca(NO_3)_2.\ 2\ H_2O]_5\ NH_4NO_3$ from $Ca(NO_3)_2.\ 4\ H_2O$, this double salt being a good fertilizer too. In our works we also operate this process on a commercial scale.

Sulfur Production

The domestic sulfur industry produced 471,615 tons of native sulfur and 28,581 of recovered sulfur during March, the Bureau of Mines reports. Producers stocks

Industrial News

CFA Says Fertilizer Key to Farm Output

Key to greatly increased farm output in recent years is the greater use of chemical fertilizers, according to a report from the California Fertilizer Association.

C.F.A., in a general statement on the value of plant foods in raising crop yields, stated that 25 per cent of total farm production is directly credited to fertilizer usage.

It reports also that number of U. S. farms has decreased by one million in the past 30 years, a drop from 6.4 million in 1920 to approximately 5.4 million today.

During the period the average size of farms has increased from 148 acres to 215 acres. That means modern know-how is enabling fewer farmers to till bigger acreages and get higher yields.

In another statement from the California group, building up of rundown pastures with fertilizer is called "the best opportunity for low unit cost milk and meat production."

New Phenol Plant

Phenol, a valuable chemical in production of the herbicide 2,4-D, will be in greater supply with opening of a unique plant in Montreal East, Quebec.

The plant will make phenol from air and oil and is designed to use a new process developed by Hercules Powder Co.

A. E. Forster, president of Hercules and Paul Mayfield, general manager of the company's Naval Stores Dept., attended the formal opening of the plant May 25.

The plant is owned and operated by B. A.-Shawinigan Ltd., under license from Hercules and from the Distillers Co. Ltd., England.

USDA Says Pink Bollworm Survives Cold Weather

Fears of USDA entomologists that the pink bollworm can survive winter temperatures in northern Texas and southern Oklahoma were well founded, recent investigations have shown.

The department reports that some of the pink bollworms, most serious insect threat to cotton, lived through the past winter under normal field conditions as far north as Greenville, Vernon and Lubbock, Tex., and Chickasha, Okla.

Until recently the insect was confined to the lower Rio Grande Valley of Texas. In the past two years, however, conditions favoring the pest have aided its spread into virtually every cotton-growing county of Texas, into southern counties in Oklahoma and western border parishes in Louisiana.

The pink bollworm cost Texas farmers an estimated $31 million in destruction of cotton and extra production costs last year, according to USDA.

With the knowledge that the insect can survive moderately cold temperatures in this country the research program aimed at control of the pest has been stepped up, K. P. Ewing, head of cotton insect research for USDA stated. Funds to aid state and federal entomologists in the fight are being supplied by the Oscar Johnston Cotton Foundation.

Nitraphosphates Aided

Production of nitraphosphate fertilizer and nitrogen will be aided at two farm chemicals plants by rapid amortization certificates issued last month by the Office of Defense Mobilization.

One certificate, granting 55 per cent accelerated amortization on a $10,500,000 plant, will aid International Minerals & Chemical Corp. to produce the nitraphosphates at Tuscola, Ill.

The other, issued to Monsanto Chemical Co. for Texas City, Tex., covers 45 per cent of the company's $16,800,000 unit for production of nitrogen.

Booklet On Crag

Carbide and Carbon Chemicals Co. has issued booklets describing its product Crag Herbicide-1, the company announced.

Separate booklets give facts on the weed killer for commercial growers and home gardeners. Recommended application rates and spray preparations are given.

Commercial Dividend

A dividend of 25 cents a share has been declared on the outstanding common stock of Commercial Solvents Corp., payable June 30 to stockholders of record at the close of business on June 4.

CALCIUM AMMONIUM NITRATE—20.5%N
SULPHATE OF AMMONIA—21%N
Call or Wire
ALEXANDER M. McIVER & SON
P. O. Box 155 Charleston, S. C.
Phones: L. D. 921 and 922

Industrial News

Anhydrous Applicator Made at Mississippi

A trailer type machine for applying liquid ammonium nitrate has been developed by Mississippi Agricultural Station to answer the problem of corrosiveness involved with the material.

The unit includes a tank, pump, manifold and feeder lines. Parts of the machine which come into contact with the solution are covered with a protective coating or made of a material which is not corroded by the solution.

Preliminary tests with anhydrous ammonia in defoliating clover for combining have been very favorable, according to a report from the station.

In another statement from the station, ammonium nitrate in solution was reported to be equal to bagged ammonium nitrate for row crops. It appears to be particularly suitable for oat and other small grains. In an experiment to compare anhydrous with ammonium nitrate for production of grasses anhydrous placed four to five inches deep produced approximately 30 per cent more forage than ammonium nitrate applied to the surface.

To Supply Chemicals

Empire Chemical & Supply Co., Inc., (of Texas) jointly owned by Hayes-Sammons Chemical Co., Mission, Tex., and C. F. Lunsford, is acting as suppliers for Empire Chemical & Supply Co., a San Francisco company owned by C. F. Lunsford.

It will act as an international and domestic sales organization, with outlets in Mexico, Central and South America, The Netherlands and other countries.

Office of the sales organization is 420 Market St., San Francisco. The corporation office is in Mission, Tex.

The sales company will handle insecticides, fungicides, herbicides and fertilizers domestically and for export.

Cal. Pesticide Law

A permit from the county agricultural commissioner to use pesticides injurious to humans is required under California's pesticide control law. The law recently was extended to 1957, replacing the old one, scheduled to expire in September.

Under the new controls, supervision by the commissioner replaces permits and review of his actions can be requested from the state director of agriculture.

USDA Issues Booklet On 17-Year Locusts

Complete information on the latest influx of the periodical cicada (17-year locust) has been issued by USDA.

Anticipating the appearance of the insect this spring, the department entomologists prepared a leaflet called "The Periodical Cicada, Leaflet 340." It still may be obtained from the Office of Information, USDA, Washington 25, D. C.

Some of the locusts appear every year, Department entomologists report, but the brood appearing this year is more numerous, because it seems to have withstood better the effects of time, man and natural enemies.

Most inquiries about the cicada are expected largely from a region bounded on the north by Pennsylvania, Ohio, Michigan and Indiana and on the south by North Carolina, Tennessee and northern Georgia.

Fruit growers in areas where the cicada are expected have been advised to protect their trees by covering them with cloth or by applying the insecticide TEPP as a water spray at the time egg-laying begins. TEPP kills the insects on direct contact, USDA stated.

San Francisco Chemical Co. Opens New Office

A sales division office for San Francisco Chemical Co., was opened by the organization June 1 at 3542 Main Street, Kansas City 11, Mo.

All business pertaining to phosphate rock for direct application will be handled by the office. The company is a pioneer in the mining of phosphate rock, having started operations in southeastern Idaho in 1908.

The company operates mines in southeastern Idaho, western Wyoming and northeastern Utah.

FERTILIZER MATERIALS

ORGANICS **CHEMICALS**

SEND US YOUR INQUIRIES AND LET US HELP YOU FIND WHAT YOU WANT

OFFERINGS SOLICITED OF SURPLUS MATERIALS

FAST DEPENDABLE BROKERAGE SERVICE

FRANK R. JACKLE

405 LEXINGTON AVENUE NEW YORK 17, N. Y.

. . . NFA

(*Continued from page 21*)

supplemental irrigation represents "a new frontier."

He declared that "higher yields and greater efficiency of fertilizer usage depends on having water available when it is needed."

An excellent summary of the irrigation situation was offered by R. Q. Parks, Manager of Agriculture Service, Grace Chemical Co., Memphis, Tenn.

He said the three things known about supplemental irrigation are the following:

1. That we have droughts through the 31 states of the so-called "humid region,"

2. That irrigation during dry weather often produces phenomenal increases in crop yields and

3. That we do have the engineering know-how and the equipment to pump water, to pipe it to the fields and to spread it on the land.

Areas in which knowledge still is needed are water resources, time of irrigation, amount of water to be used and how to work out the optimum combination of soil, fertilizer, crop and water management practices for maximum production.

Industry Cooperation

The other speaker, James E. Ferguson, Sprinkler Irrigation Association, Washington, D. C., gave a technical talk on a mathematical method for determining when and how to irrigate. He said both the sprinkler equipment industry and the fertilizer industry can profit by cooperative research in the field of irrigation.

H. H. Tucker, president of the Coke Oven Ammonia Research Bureau Inc., Columbus, O., was moderator for the forum.

Soil testing was mentioned prominently in the second panel, on use of more fertilizers.

Moderated by Roy Battles, assistant to the master of the National Grange, it was composed of the following experts:

Milton C. Cummings, president of Farmers and Merchants State Bank, Effingham, Kan., representing credit agencies; Werner L. Nelson, in charge of Soil Fertility Research, North Carolina State College, representing Land Grant Colleges; Omar J. Kelley, head of the division of soil management—Irrigated and dry-land regions, USDA, representing that department and W. F. Price, plant food division of Swift & Co., fertilizer industry.

Highlights of their discussions follow:

Kelley—Stressed need for soil testing to predict fertilizer needs for efficient utilization, mentioned mountain meadows as field for fertilization and talked about the importance of irrigation to phosphorus fertilization and the use of plant foods to help prevent water runoff and erosion.

Bank Assistance

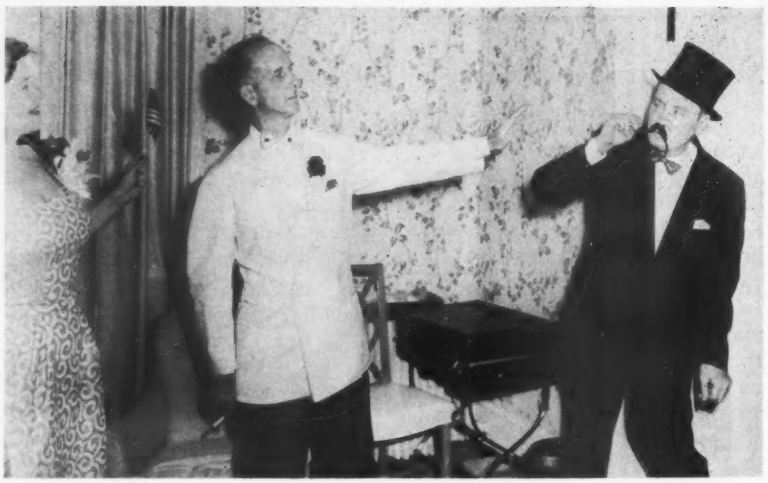
Cummings—Said banks can assist in establishment of soil testing laboratories and can work with public and private interests in furthering the cause of fertilizer usage. He said fertilizers are the "only permanent source of wealth in Kansas."

Nelson—Urged thorough education for future agricultural leaders to the dollars and cents value of using plant foods.

Price—Summarized the two-sided problem of the fertilizer industry as the ever-increasing tonnage and the need to find "a home for 50 per cent more fertilizer in 1955 than was consumed in 1951."

Entertainment, golf and tennis tournaments, the well-planned "Festival Night," together with the unexpected strike of Greenbrier employes helped give representatives plenty to do in the time not spent at regular meetings.

'Get Out, You Scoundrel'



"You must pay the bill" snarls the Wolf of Wall Street (Rex Morgan, Ark-Mo Plant Food Co.) to Prudence Pennywise (Mrs. Harold Dinges, Spencer Chemical Co.) in mellerdrama entitled "Guano Is A Girl's Best Friend" performed by Spencer delegates at NFA convention. Simon Fairface, center, otherwise known as Bill Chace, of NFA, defends the heroine in the role of an Ohio Manipulated Guano Co. star salesman.

Board Elections

Elected to NFA's board of directors were the following:

Re-elected directors-at-large—E. A. Geoghegan, Southern Cotton Oil Co., New Orleans, La.; Russell Coleman, NFA, Washington, D. C. and J. E. Nunnally, Cotton Producers Association, Atlanta, Ga.

Newly elected directors-at-large—W. J. Murphy, American Potash & Chemical Corp., New York City; Hugo Riemer, Nitrogen Div., Allied Chemical & Dye Corp., New York City and Marlin Geiger, Davison Chemical Corp., Baltimore, Md.

Elected to district directorships were L. Graham Campbell, Chamberlin & Barclay, Inc., Cranbury, N. J., district 2; R. D. Martenet, E. Rauh & Sons Fertilizer Co., Indianapolis, Ind., 3; Elbert N. Carvel, Valliant Fertilizer Co., Laurel, Del. and W. A. Watmough Jr., Davison Chemical Corp., Baltimore, Md., 4; R. L. King, Georgia Fertilizer Co., Valdosta, Ga., 6; H. B. Fultz, Hector Supply Co., Miami, Fla., 7; T. W. Allen, Sand Mountain Fertilizer Co., Attalla, Ala., 8; C. D. Shallenberger, Shreveport Fertilizer Works, Shreveport, La., 9 and George F. Wilkins, Gates Bros., Inc., Wendell, Ida., 11. ◆

New National Fertilizer Assn. Members

Since the annual June, 1952 convention, the following organizations have become members of the National Fertilizer Association:

ACTIVE: **Bartlett & O'Bryan Fertilizer Co.,** Owensboro, Ky.; **Chatelier Plant Food,** St. Petersburg, Fla.; **Davison Chemical Corp.,** Baltimore, Md.; **Dixie Fertilizer Co., Inc.,** Shreveport, La.; **Greenville Plant Food Co.,** Greenville, Ala.; **Marion Plant Life Fertilizer Co.,** Marion, O.; **"Na-Churs" Plant Food Co.,** Marion, O.; **Northeast Mississippi Fertilizer Co.,** Amory, Miss.; **Oklahoma Fertilizer and Chemical Co.,** Oklahoma City, Okla.; **J. L. Pilcher & Sons, Inc.,** Meigs, Ga.; **Southwest Potash Corp.,** New York City; **Suburban Farm Service Co.,** Whippany, N. J.; **W. B. Tilghman Co.,** Salisbury, Md.; **United States Potash Co., Inc.,** New York City and **Western Delta Chemical Co.,** Walnut Grove, Cal.

ASSOCIATE: **Agricultural Chemicals,** New York City; **Balfour, Guthrie & Co., Ltd.,** San Francisco, Cal.; **Chemical and Industrial Corp.,** Cincinnati, O.; **The Dorr Co.,** Stamford, Conn.; **Ferro Corp.,** Cleveland, O., **The Fertilisers and Chemicals,** Alwaye, South India; **Food Machinery and Chemical Corp.,** Middleport, N.Y.; **E.S. Gandrud Co., Inc.,** Owatonna, Minn.; **Grace Chemical Co.,** New York City; **Fertilizer Engineering & Construction Co.,** Garland, Tex.; **D. B. Gray Farmers Elevator Co.,** Hull, Ill.; **Hyderabad Chemicals & Fertilizer Ltd.,** Secunderabad-Dn, India; **The Illinois Anhydrous Ammonia Co.,** Farmer City, Ill.; **Imperial Chemical Industries (New York) Ltd.,** New York City; **Japan Ammonium Sulphate Industry Association,** Tokyo, Japan; **Jos. C. Jett,** Norfolk, Va.; **Link-Belt Co.,** Chicago, Ill.; **Monsanto Chemical Co.,** St. Louis, Mo. **R. S. Mueller Co.,** Baltimore, Md.; **Jack Myles (Central National Corp.),** New York City; **National Lead Co.,** Atlanta, Ga.; **New Holland Machine Co.,** New Holland, Pa.; **Nicolay-Titlestad Corp.,** New York City; **Norsk Hydro Sales Corp.,** New York City; **The Phosphate Co., Ltd.,** Calcutta, India; **Rust Process Design Co.,** Pittsburgh, Pa., **Soil Builders, Ltd.,** Toronto, Ont.; **Universal Detergents, Inc.,** Long Beach, Cal. and **Zonolite Co.,** Chicago, Ill.

Bamag Electrolyser In Use at Chas. Pfizer Co.

Generation of pure hydrogen and oxygen gases is possible with a Bamag bipolar type electrolyser, now in operation with Chas. Pfizer & Co., Inc.

Exclusive agent for the Bamag electrolysers in the United States is General Industrial Development Corp., of New York City.

The electrolytic gas generator was purchased from Bamag-Meguin, A. G. of West Germany, the original inventors, designers and manufacturers of the bipolar cells. The electrolyser, model B-30, was erected and put into operation in May at the Groton, Conn. plant of Chas. Pfizer & Co., Inc. The unit supplies 100 per cent pure hydrogen and 99 per cent pure oxygen.

Velsicol Completes Big Unit at Memphis Plant

Velsicol Corp. has just completed construction of a $2,000,000 addition to its large Memphis plant to meet the increased demand for its chlorine products.

Among other uses the chlorine is used in production of many pesticides.

Hooper Promoted

New manager of the Portland offices of Wilson & Geo. Meyer & Co., coastwide distributors of agricultural and industrial chemicals, is John N. Hooper.

He succeeds John A. Foster, who has been named manager of the Salt Lake City offices of the company.

Intermountain, a separate company newly formed to distribute the phosphatic fertilizer products of the $5,000,000 plant of Western Phosphates, Inc. now is under construction at Garfield, Utah.

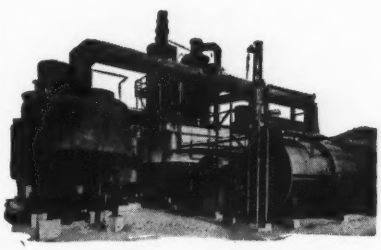
Foster has been in charge of the local office since 1946. Hooper joined the local staff last year.

Anderson Gets Post

Dr. Robert J. Anderson has been named assistant chief of the USDA's Bureau of Animal Indstry, in charge of disease control and eradication activities. Dr. Anderson assumed the post in the Agricultural Research Administration June 7, succeeding Dr. S. O. Fladness, who died May 5.

CHEMICO PLANTS

are profitable investments



Chemico's services cover every detail in design and construction of sulphuric acid plants, acid concentrators, complete fertilizer plants and P-A Venturi Scrubbers for fluorine fume elimination.

Chemico's performance guarantees are backed up by 38 years of experience. Consultation involves no obligation.

CHEMICAL CONSTRUCTION CORPORATION

488 Madison Ave. New York 22, N. Y.

. . . Plant Food Convention

(*Continued from page 16*)

he has very little to say about whether the years are good or bad, Hope declared, in talking on the topic "Congress and Farm Policy."

Forum Is Highlight

One of the highlights of the convention was the agricultural forum, "Fertilizers Blaze New Trails Across the Nation." Dr. Paul D. Sanders, editor of Southern Planter, acted as moderator. He was introduced by APFC Agronomist Dr. John R. Taylor Jr.

Dr. Sanders said that despite the fact fertilizers are blazing new trails "we reluctantly must admit there are all too many farmers who are not using plant foods effectively."

"With our farming acres limited," he added, "with our farm population decreasing, with farm labor costs as high as they are today, the efficient farmer—in order to stay in business—must use plant foods efficiently."

Speaking on the forum, Dr. W. E. Martin, extension soils specialist at the University of California at Berkeley, estimated that "probably the greatest possibility of increased fertilization in our (California) cultivated crops is in the barley, wheat and oats acreage."

"We in California have nearly three and a half million acres of barley, wheat and oats," he said. "Only 18 per cent receives any nitrogen, and eight per cent any phosphorus. The average rates of application are seven pounds of nitrogen and two pounds of phosphorus per acre.

"Result of a four-year field study comparing 220 field tests on grain fertilization show 60 per cent of our grainlands to be deficient in nitrogen, 42 per cent deficient in phosphorus while 25 per cent are currently deficient in both nutrients."

Fertilizer Up In Northeast

Lester H. Smith, extension agronomist, University of Vermont predicted that on New England dairy farms the rates of fertilization "will continue to rise" resulting in "more efficient use of labor and machinery and more milk per man."

He said 200,000 pounds of milk per man per year "is a goal to shoot for" but pointed out that "there are too many farmers in the 80,000–100,000 bracket."

The Vermont agronomist quoted Dr. Ray Tremblay, research economist for the Vermont Experiment Station, as saying that "Vermont fertilizer recommendations are not too high; in fact I doubt that they are high enough." He said that Dr. Tremblay had just completed a dairy fertilizer study "in which he found that $1 invested in fertilizer returned $5 in profit."

Another forum participant, Dr. Arnold W. Klemme, extension specialist in soils at the University of Missouri, declared that "if all the pasture acreage in Missouri were given full soil treatments, renovated and reseeded, it would add to the present income from animal products a half billion dollars annually."

The Missouri agronomist said "the growing of more nutritious pastures permits more economical production of animal products such as milk, meat and eggs for our increasing population."

He also pointed out that adequate fertilization "raises the protein content of corn, lowers production costs and increases cash returns to farmers."

Picture In Southeast

H. A. Woodle, extension agronomy leader at the Clemson (S. C.) Agricultural College, the other member, advised that farmers in the southeastern states "should use more than twice the amount of fertilizer we are using" and pointed out that "farmers get returns of from $3 to $18 for every dollar invested in chemical fertilizers."

Mr. Woodle emphasized the importance of demonstrations to promote the adoption of improved agricultural practices. He said "farmers who are not now following agricultural college recommendations must see the result 'written in the soil'" and added that "in short, our charts and tables mean little to farmers but demonstrations do change farm practices."

In another convention address, Dr. T. K. Cowden, head of the department of agricultural economics at Michigan State College, predicted that "agricultural net incomes will be lower in 1953 than in 1952 by something like 10 percent," that "in 1954 we will likely have some further decline," and following that "barring an all-out war . . . agriculture may be headed for another period similar to that which existed between 1922 and 1929" which was marked by "fairly good industrial activities, one in which farm costs remained relatively high in relation to prices received by farmers."

Soil Builders Award

Awards for "superior journalistic contributions toward the building of the soils of our Nation" were presented at the convention by Louis H. Wilson, APFC director of information, to winners of the Council's Soil Builders Award for Editors contest.

Winning publications were *Successful Farming* and the *Pennsylvania Farmer*.

Jim Roe, managing editor of the former, received the award for its editor, Kirk Fox, while Norman F. Reber, of the *Farmer* staff, accepted the award for its editor, M. C. Gilpin.

Following the presentation Wilson was named an honorary lifetime member of the American Agricultural Editor's Association. Dr. Sanders made the presentation.

Golf and tennis tournaments, a well-organized program for the ladies and receptions by Southwest Potash Corp. and Potash Company of America kept delegates and their families entertained during the convention.

In other business, the following were elected to the board of directors for three-year term expiring June 30, 1956: J. J. Joyce, Reliance Lime and Fertilizer Corp., Norfolk, Va.; C. Cecil Arledge, Virginia–Carolina Chemical Corp., Richmond, Va.; W. C. Stark, Atlantic Fertilizer Corp., Riverhead, N. Y.; George E. Petitt, Potash Company of America, Washington, D. C.; P. J. Prosser, The Baugh & Sons Co., Baltimore, Md.; John E. Stanford, Armour Fertilizer Works, Atlanta, Ga.; A. D. Strobhar, Southern Fertilizer and Chemical Co., Savannah, Ga. and J. Albert Woods, Commercial Solvents Corp., New York. ◆

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Julius Hyman & Co. Div., Shell Chemical Corp., Denver, Colo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

AMMONIA—Anhydrous and Liquor
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Lion Oil Co., El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM PHOSPHATE
Monsanto Chem. Co., St. Louis, Mo.

AMMONIUM SULFATE
See Sulfate of Ammonia

AMMONIUM SULFATE NITRATE
Baker & Bro., H. J., New York City

BAGS—Burlap
Bemis Bros. Bag Co., St. Louis, Mo.
McIver & Son, Alex. M., Charleston, S. C.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAGS—Cotton
Bemis Bro. Bag Co., St. Louis, Mo.
McIver & Son, Alex. M., Charleston, S. C.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAGS—Multiwall-Paper
Bemis Bro. Bag Co., St. Louis, Mo.
International Paper Co., Bagpak Div., N. Y. C.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Hudson Pulp & Paper Corp., N. Y. C.
Jaite Company, The, Jaite, Ohio
Kraft Bag Corporation, New York City
McIver & Son, Alex. M., Charleston, S. C.
Raymond Bag Co., Middletown, Ohio
Union Bag & Paper Corp., New York City
Virginia-Carolina Chemical Corp., Richmond, Va.

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES
Fischbein Co., Dave, Minneapolis, Minn.
International Paper Co., Bagpak Div., N. Y. C.

BAG CLOSING—THREAD & TWINE
Bemis Bros. Bag Co., St. Louis, Mo.

BAG PRINTING MACHINES
Schmutz Mfg., Louisville, Ky.

BAG FILLING MACHINES
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

BHC AND LINDANE
Ashcraft-Wilkinson Co., Atlanta, Ga..
Diamond Alkali Co., Newark, N. J.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Pittsburgh Agricultural Chemical Co., N. Y. C.
Wyandotte Chemicals Corp., Wyandotte, Mich.

BONE PRODUCTS
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
McIver & Son, Alex M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID
American Potash and Chem. Corp., N. Y. C.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BUCKETS—Hoist, Crane, etc.
Hayward Company, The, New York City

CALCIUM ARSENATE
American Agricultural Chemical Co., N. Y. C.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.

CARS AND CART
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

CASTOR POMACE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
McIver & Son, Alex. M., Charleston, S. C.

CHEMISTS AND ASSAYERS
Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CHLORDANE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C
Pittsburgh Agricultural Chemical Co., N. Y. C.

CLAY
Ashcraft-Wilkinson Co., Atlanta, Ga.

CONDITIONERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Findlay, Ohio

CONTROL SYSTEMS
Sackett & Sons Co., The A. J., Baltimore, Md.

CONVEYORS—Belt
Sackett & Sons Co., The A. J., Baltimore, Md.

COPPER SULFATE
Phelps Dodge Refining Corp., New York City
Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa

DDT
Ashcraft-Wilkinson Co., Atlanta, Ga.
Diamond Alkali Co., Newark, N. J.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.
Wyandotte Chemicals Corp., Wyandotte, Mich.

DIELDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Julius Hyman & Co. Div., Shell Chemical Corp., Denver, Colo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

DILUENTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Agricultural Chemical Co., N. Y. C.
Wyandotte Chemicals Corp., Wyandotte, Mich.

DITHIOCARBAMATES
Berkshire Chemicals, New York City

DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS—Bucket
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

EMULSIFIERS
Atlas Powder Co., Wilmington, Del.
Wyandotte Chemicals Corp., Wyandotte, Mich.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Fairlie, Inc., Andrew M., New York City
General Industrial Development Corp., N. Y. C.
Marietta Concrete Corporation, Marietta, Ohio
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER—Mixed
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Corporation, Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

FILLERS
McIver & Son, Alex. M., Charleston, S. C.
Universal Detergents Inc., Long Beach, Cal.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

FULLER'S EARTH
Ashcraft-Wilkinson Co., Atlanta, Ga.

FUNGICIDES
American Agricultural Chemical Co., N. Y. C.
Berkshire Chemicals, New York City
Gen. Chem. Div., Allied Chem. & Dye, N. Y. C.
Tennessee Corp., Atlanta, Ga.

GAS MASKS
Willson Products, Inc., Reading, Pa.

GOGGLES
Willson Products, Inc., Reading, Pa.

HERBICIDES
Diamond Alkali Co., Newark, N. J.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.
Wyandotte Chemicals Corp., Wyandotte, Mich.

HERBICIDES—Oils
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Lion Oil Company, El Dorado, Ark.

HOPPERS & SPOUTS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind..

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Berkshire Chemicals, New York City
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Diamond Alkali Co., Newark, N. J.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Julius Hyman & Co. Div., Shell Chemical Corp., Denver, Colo.
Pittsburgh Agricultural Chemical Co., N. Y. C.
Virginia-Carolina Chemical Corp., Richmond, Va.
Wyandotte Chemicals Corp., Wyandotte, Mich.

IRON SULFATE
Tennessee Corp., Atlanta, Ga.

LEAD ARSENATE
American Agricultural Chemical Co., N. Y. C.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.

LIMESTONE
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Findlay, Ohio
Pittsburgh Agricultural Chemical Co., N. Y. C.

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

LOADERS—Car and Wagon
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Acidulating
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Ammoniating
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Granulating, Fertilizer
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Grinding and Pulverizing
Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Material Handling
Atlanta Utility Works, The, East Point, Ga.
Hayward Company, The, New York City
Hough, The Frank G. Co., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Mixing, Screening and Bagging
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Power Transmission
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY
Superphosphate Manufacturing
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MAGNESIUM SULFATE
Berkshire Chemicals, New York City

MANGANESE SULFATE
McIver & Son, Alex. M., Charleston, S. C.
Tennessee Corp., Atlanta, Ga.

MANURE SALTS
Potash Co. of America, Washington, D. C.

MINOR ELEMENTS
Tennessee Corporation, Atlanta, Ga.

MIXERS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

NITRATE OF POTASH
Berkshire Chemicals, New York City

NITRATE OF SODA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Lion Oil Company, El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

NITROGEN MATERIALS—Organic
American Agriculture Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray
Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

PARATHION
Ashcraft-Wilkinson Co., Atlanta, Ga.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

PENTACHLOROPHENOL
Monsanto Chemical Co., St. Louis, Mo.

PHOSPHATE ROCK
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Virginia-Carolina Chemical Corp., Richmond, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID
American Agricultural Chemical Co., N. Y. C.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Monsanto Chemical Co., St. Louis, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va.

PLANT CONSTRUCTION—Fertilizer and Acid
Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
General Industrial Development Corp., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation Nicolay, New York City

POTASH—Muriate
American Potash & Chemical Corp., N. Y. C.
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Baker & Bro., H. J., New York City
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.
United States Potash Co., N. Y. C.

POTASH—Sulfate
American Potash & Chemical Corp., N. Y. C.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Potash Co. of America, Washington, D. C.

POTASSIUM PHOSPHATE
Monsanto Chemical Co., St. Louis, Mo.

PRINTING PRESSES—Bag
Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE
Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

RESPIRATORS
Willson Products, Inc., Reading, Pa.

SACKING UNITS
Sackett & Sons Co., The A. J., Baltimore, Md.

SCALES—Including Automatic Baggers
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SEPARATORS—Air
Sackett & Sons Co., The A. J., Baltimore, Md.

SOIL CONDITIONERS
Wyandotte Chemicals Corp., Wyandotte, Mich.

SPRAYS
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

STORAGE BUILDINGS
Marietta Concrete Corporation, Marietta, Ohio

SULFATE OF AMMONIA
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Jackle, Frank R., New York City
Lion Oil Co., El Dorado, Ark.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Phillips Chemical Co., Bartlesville, Okla.
United States Steel Corp., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA
International Min. & Chem. Corp., Chicago, Ill.

SULFUR
Ashcraft-Wilkinson Co., Atlanta, Ga.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
U. S. Phosphoric Products Div., Tennessee Corp. Tampa, Fla.

SULFURIC ACID
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
International Min. & Chem. Corp., Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.

SURFACE ACTIVE AGENTS
Universal Detergents Inc., Long Beach, Cal.

SUPERPHOSPHATE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davison Chemical Corporation, Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated
Armour Fertilizer Works, Atlanta, Ga.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Virginia-Carolina Chemical Corp., Richmond, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC
Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TEPP
Monsanto Chemical Co., St. Louis, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va.

TOXAPHENE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Pittsburgh Agricultural Chemical Co., N. Y. C.

2, 4-D
Diamond Alkali Co., Newark, N. J.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

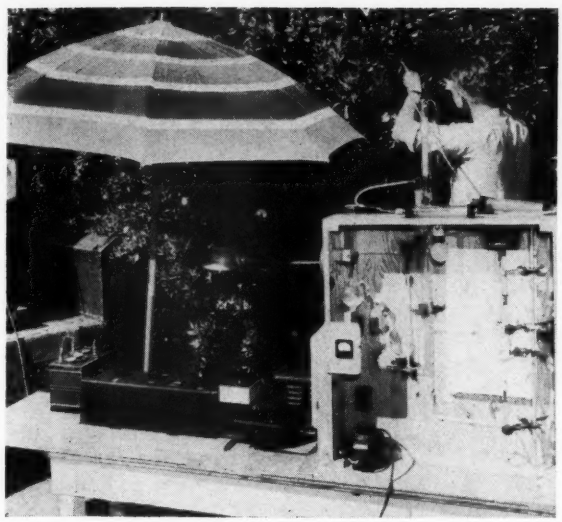
2, 4, 5-T
Diamond Alkali Co., Newark, N. J.
Gen. Chem. Div., Allied Chem. & Dye, N.Y.C.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Agricultural Chemical Co., N. Y. C.

UREA & UREA PRODUCTS
Baker & Bro., H. J., New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C

VALVES
Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

WETTING AGENTS
Universal Detergents Inc., Long Beach, Cal.
Wyandotte Chemical Corp., Wyandotte, Mich.

ZINC SULFATE
Tennessee Corp., Atlanta, Ga.



Quartz Spectrophotometer Unit

Spectrophotometer shows . . .

Parathion Dangers

MILLIONS of dollars are spent each year in the pesticide industry to find out just what a product will do.

Now research workers are spending money and using delicate instruments in important West Coast studies to find out what one of these products will not do.

Four members of the California Citrus Experiment Station, at Riverside, Calif., are making studies to determine whether citrus pickers run the same risk as the bugs in orchards sprayed with parathion.

Use Sensitive Instrument

Using a sensitive Quartz Spectrophotometer to analyze on-the-spot samples of orchard air, the researchers disproved the popular theory that parathion gives off poisonous vapors after spraying.

The scientists are Drs. G. E. Carman, F. A. Gunther, R. C. Blinn and R. D. Garmus. Over a six-month period they found no more than 0.05 milligram of the powerful insecticide vapor per cubic meter of air in any of the groves tested.

Said Dr. Carman, "Small residues of the pesticide were detected on air-borne solid particles, but not in the gaseous phase."

Some Injuries Reported

In some cases, Dr. Gunther stated, humans exposed too early to treated groves actually have suffered ill effects in the past. He added that such occurrences required the passage of safety-margin laws which forbid pickers to enter a grove until 30 days after pesticide application.

The Spectrophotometer is a precision-electronic device which analyzes elements by passing light through them. ◆

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City..... 8
American Potash and Chemical Corp., New York City..... 2
Armour Fertilizer Works, Atlanta, Ga..... 42
Ashcraft-Wilkinson Co., Atlanta, Ga.....Front Cover, 41
Atlanta Utility Works, The, East Point, Ga..... 64
Atlas Powder Co., Wilmington, Del..... —
Baker & Bro., H. J., New York City.....20, 21
Bemis Bro. Bag Co., St. Louis, Mo..... 25
Berkshire Chemicals Inc., New York City..... 40
Bradley Pulverizer Co., Allentown, Pa..... 64
Chemical Construction Corp., New York City..... 71
Davison Chemical Corporation, Baltimore, Md..... 6
Diamond Alkali Co., Newark, N. J..... 55
Duval Sulphur & Potash Co., Houston, Tex..... 41
Fischbein Co., David, Minneapolis, Minn..... —
Gascoyne & Co., Inc., Baltimore, Md..... 64
General Chemical Div., Allied Chemical & Dye Corp., New York City..... —
General Industrial Development Corp., New York City..... —
Hammond Bag & Paper Co., Wellsburg, W. Va..... 17
Hayward Company, The, New York City..... 64
Hough, The Frank G., Libertyville, Ill..... —
Hudson Pulp & Paper Corp., New York City..... —
International Paper Co., Bagpak Div., New York City..... —
International Minerals & Chemical Corp. Chicago, Ill.....Back Cover
Jackle, Frank R., New York City..... 69
Jaite Company, The, Jaite, Ohio..... —
Keim, Samuel D., Philadelphia, Pa..... 60
Kraft Bag Corporation, New York City..... 58
Lion Oil Company, El Dorado, Ark..... 12
Marietta Concrete Corp , Marietta, Ohio..... —
Mathieson Agricultural Chemicals Co., Little Rock, Ark..... 28
McIver & Son, Alex M., Charleston, S. C.....42, 60, 68
Monarch Mfg. Works, Inc., Philadelphia, Pa..... 64
Monsanto Chemical Co., St. Louis, Mo..... —
National Lime & Stone Co., Findlay, Ohio..... 60
Nitrogen Division, Allied Chemical & Dye Corp., New York City..... 66
Ph lps Dodge Refining Corp., New York City..... 61
Phillips Chemical Co., Bartlesville, Okla..... 36
Pittsburgh Agricultural Chemical Co., New York City..... 5
Potash Co. of America, Washington, D. C.....Third Cover
Raymond Bag Co., Middletown, Ohio..... 4
Sackett & Sons Co., The A. J., Baltimore, Md.....50, 51
Schmutz Mfg. Co., Louisville, Ky..... 23
Shell Chemical Corporation, Denver, Colo..... 1
Shuey & Company, Inc., Savannah, Ga..... 64
Southern States Phosphate & Fertilizer Co., Savannah, Ga. 64
Southwest Potash Corporation, New York City.....—
Spencer Chemical Company, Kansas City, Mo..... —
Spraying Systems Co., Bellwood, Ill..... —
Stedman Foundry and Machine Co., Inc., Aurora, Ind..... 40
Sturtevant Mill Co., Boston, Mass..... —
Tennessee Corporation, Atlanta, Ga..... 46
Texas Gulf Sulphur Co., New York City..... 11
Titlestadt Corp., Nicolay, New York City..... —
Union Bag & Paper Corp., New York City.....Second Cover
Universal Detergents, Inc., Long Beach, Cal..... —
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla..... 60
United States Potash Co., New York City..... 33
Virginia-Carolina Chemical Corp., Richmond, Va..... —
Wiley & Company, Inc., Baltimore, Md..... 64
Willson Products, Inc., Reading, Pa..... 56
Woodward & Dickerson, Inc., Philadelphia, Pa..... 40
Wyandotte Chemical Corp., Wyandotte, Mich..... 63

Advice for Executives

IT'S probable that many industry representatives didn't take time, in the rush of the recent American Plant Food Council Convention, to mull over the words of advice given by speaker H. H. Maynard.

It's also probable that many delegates to the session at the Homestead were "too busy" even to stop in at the auditorium and hear the talk.

That is unfortunate, because Maynard's address contained some valuable suggestions for harried fertilizer (and pesticide) personnel.

The talk was billed "Looking at Business," but a more appropriate title might have been "Looking at Businessmen."

Maynard, chairman of the Department of Business Organization at Ohio State University, is worried about you top leaders in the industry.

He thinks businessmen in all industries assume too many of the burdens of the company, on their own shoulders. In the farm chemicals field, of course, these worries are emphasized during a short period of the year, so the executive is under concentrated strain.

According to Maynard businessmen who are seeking success by assuming every responsibility in sight are foolish.

In his words, "Success is not so much being smart as being sensitive."

Here are some of the areas of "sensitivity" where an alert leader can unburden himself and make his business more efficient, according to Maynard:

1. Train junior members of the firm to do many of the jobs now being performed by top personnel. Maynard decried as a myth the idea that junior members of the business "just can't do" the jobs of their seniors.

2. Find out all you can about company personnel. Be able to determine at any time who is promotable in the organization.

3. Keep abreast of the activities in the business. Know what the salesmen are doing, and why.

4. Use training programs for efficient channeling of the right man into the right job.

Maynard added one last thought that will be very popular with industry wives and should be popular with their husbands: Take two vacations a year, one in winter and one in summer—and don't worry!

* * *

FARM CHEMICALS spends so much of its time and space trying to keep readers informed on what's new in agriculture and the chemicals serving it that we have little time to talk about what's needed.

Happily one of our industry leaders, S. L. Nevins, president of Mathieson Agricultural Chemicals Division, covered both phases of the subject in a recent talk in Baltimore before a meeting of the Chemical Market Research Association.

After presenting a very thorough outline of developments during recent years in the farm chemicals industry, Nevins listed these things as needed in agriculture:

1. In manufacturing we need a reappraisal of raw materials and factory locations, in order to process low-cost low-grade raw materials economically and cut down wasteful skimming of our natural resources.

2. In marketing we need a new concept of profit making. The lack of profits in years past has held back production research and in market research that was badly needed in the fertilizer industry. Lack of profits has made large investment in new plants too risky.

3. We need a new appraisal of our prospects and our markets. Our industry should make a more careful study of farm economy, looking toward a more economical distribution of our products, so as to protect our manufacturing costs and profits and cover our merchandising expenses.

4. We should give more generously to support agricultural research in fields related to the effective use of our products.

5. We should study the growing field of minor elements and the best means of providing them to crops.

6. Most of all we need a broadened educational program, well illustrated with visual aids, that will reach not only the farmers, but also the bankers who finance their production programs and the government specialists and county agents and vocational agricultural teachers who advise farmers.

Nevins has some valuable suggestions. Following them enthusiastically might help provide a solution to the intricate problems that continue to harass American agriculture and the industries serving it.

—HAMILTON C. CARSON

• *Man Power*

The Federal Reserve Pank figures indicate that in the past 15 years, farm output per man has risen sharply.

Increases in mechanization and in the use of fertilizer get much of the credit.

As prime producers of high grade red muriate of potash, we are happy to share in the growth of our agricultural economy.

POTASH COMPANY of AMERICA
Carlsbad, New Mexico

General Sales Office . . . 1625 Eye Street, N. W., Washington, D. C.
Midwestern Sales Office . . . First National Bank Bldg., Peoria, Ill.
Southern Sales Office . . . Candler Building, Atlanta, Ga.

put it in the bag

put it on the bag

on

in

Sul-Po-Mag®

WATER-SOLUBLE $K_2SO_4 \cdot 2MgSO_4$
DOUBLE SULFATE OF POTASH-MAGNESIA

CONTAINS SOLUBLE MAGNESIUM

THE FOURTH ELEMENT

Soluble magnesium—a basic ingredient in mixed fertilizers in many crop growing areas—is commonly spoken of as the *fourth plant food element* in the fertilizer bag.

The practical and economical way to supply magnesium in soluble form is with *Sul-Po-Mag*, a properly balanced combination of *sulfate of magnesium* and *sulfate of potash*. Both are water-soluble and immediately available to soil organisms and growing plants.

Fertilizer manufacturers from coast to coast are including soluble magnesium as the fourth element in their quality grades. Wherever there are magnesium deficiencies in the soil, farmers are profitably using soluble magnesium on a wide variety of crops.

Sul-Po-Mag, which contains magnesium—the fourth element, will give you a better balanced fertilizer. A sales package that will "stand out" at your dealers. A more profitable buy for the farmer. So put it *in* the bag, put it *on* the bag: Nitrogen—Phosphate—Potash—Magnesium. Show that your fertilizer contains an *extra punch* for greater crop quality and yields.

Sul-Po-Mag is produced exclusively by *International* in bulk for mixed fertilizers and bagged for direct application.

MURIATE OF POTASH • SULFATE OF POTASH • SUL-PO-MAG

Mined and Refined at Carlsbad by International for Fertilizer Manufacturers

Potash Division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

International Minerals & Chemicals